GUIDE TO RANGE PLANT COMMUNITY TYPES AND CARRYING CAPACITY FOR THE DRY AND CENTRAL MIXEDWOOD SUBREGIONS IN ALBERTA

Alberta
SUSTAINABLE RESOURCE
DEVELOPMENT

Public Lands
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Fourth approximation

(Please note this edition is a revision of the 3rd approximation of the Range Plant Community Types and Carrying Capacity for the Dry and Central Mixedwood Pub. No. T/526)

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FORWARD

In January, 1999 the Rangeland Health Assessment Project was initiated. Its purpose was to coordinate the development of rangeland health assessment methods and ecological site descriptions for both forested and grassland dominated rangelands in the province and transfer the new technology (awareness, information and tools) to livestock producers, staff and other stakeholders. This document "Range plant communities and carrying capacity for the Dry and Central Mixedwood subregions of Alberta, Fourth Approximation" is an effort to organize existing range plant community information for the Boreal Mixedwood subregions into an ecological framework, with the ultimate goal of developing ecological site descriptions as outlined in the Alberta Rangeland Health Task Group, Terms of Reference (1999). This guide encompasses the work of Karen Sundquist (who worked on previous approximations) and Dave Downing who developed the classification for the deciduous communities in the Eastern ecodistricts of the Dry Mixedwood (Downing and Karpuk 1992) and developed a forage gap analysis for the Mixedwood subregions (Downing 2000). It also tries to incorporate the work done by Beckingham and Archibald (1996) on the forested ecosites of the Boreal Mixedwood and work done by Thompson and Hansen (2004) on the lotic and lentic communities of the Mixedwood subregions. As we collect new research information, the fourth approximation will evolve into a range ecological site field guide. One major outcome of the project will be to produce ecological base information which will be used to develop management tools for northern livestock producers, resource managers and other stakeholders of Alberta's Boreal forest. This new knowledge will aide in the sustainable grazing of forested plant communities, and maintain the good health and proper functioning of these ecosystems.

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Abstract

The Dry and Central Mixedwood subregions cover nearly 40% of the province and are dominated by aspen, jack pine on coarse textured soils and black spruce, willows and sedges in the poorly drained areas. The vegetative communities in these subregions are important because they provide summer range for livestock, prime habitat for many species of wildlife, productive watersheds, recreational areas and timber harvesting. Despite the importance of these vegetation types there is little information on their ecology. The lack of information makes it very difficult to develop sustainable management prescriptions for multiple use. As a result guides like this and "Ecosites of Northern Alberta" (Beckingham and Archibald 1996) are being developed to provide a framework that will easily group the vegetative community types. It is hoped these classification systems can be used by field staff to assess the ecology of the sites and develop management prescriptions on lands within each region.

This guide represents the analysis of 895 grass, shrubland, conifer and deciduous plots described in the Dry and Central Mixedwood subregions. These types are split into:

Dry Mixedwood subregion

A. Native grasslands and shrubland	33 types
B. Tame forage communities	13 types
C. Deciduous community types	21 types
D. Mixedwood and Conifer community types	14 types

Central Mixedwood subregion

A. Native grassland and shrubland	18 types
B. Tame forage communities	7 types
C. Deciduous community types	18 types
D. Mixedwood and Conifer community types	12 types

Introduction

The province of Alberta is covered by a broad spectrum of vegetation regions from prairie in the South, to alpine vegetation in the mountains and dense forests in the Central and Northern parts of the province. These broad vegetation regions have been classified into 6 regions and 20 subregions (Dept. of Environmental Protection 1994). Within each subregion, there are groups of plant communities which exist under similar, localized, environmental conditions and can be further influenced by human impacts. Sustainable management of these subregions requires an understand the ecology of the site coupled with the ability to recognize the vegetative communities that have similar productivity and response to disturbance.

Vegetative communities in the province of Alberta are highly regarded by most resource managers for their ability to provide a wide variety of benefits. They are a classic example of multiple use land, providing summer range for livestock, prime habitat for many species of wildlife, productive watersheds and recreational areas. Despite the importance of these vegetation types there is little information on their ecology. The lack of information makes it very difficult to development sustainable management prescriptions for multiple use.

The purpose of this guide was to develop a framework that would easily group the plant community types utilized by livestock in the Dry and Central Mixedwood subregions of the province. Plant communities are grouped into a hierarchal system based on ecology. These groupings include successional communities which occur under natural succession, or disturbance such as fire, timber or grazing operations. All of the known relationships among communities are described within this guide in table format and/or schematically. Additionally, each known plant community is described in detail.

It is hoped this classification system can be used by field staff to assess the ecology and sustainable stocking rate of sites in order to develop management prescriptions on lands within each subregion. This guide supplements the work done by Beckingham and Archibald (1996) on the forested community types in the Boreal Mixedwood of northern Alberta. Their guide is a good description of the forested community types found within the subregions, but it does not include forage production values or grazing management information. It also does not provide a description of the native grassland and shrubland communities which are utilized extensively by livestock in these subregions.

Climate and Modal Plant Communities

Dry Mixedwood subregion

The **Dry Mixedwood (DM)** subregion represents a transition between the Central and Peace River Parklands and the Central Mixedwood subregions. This subregion occurs in three areas of the province. One section is located between the Central Parkland and the Central Mixedwood subregions in the southern portion of the boreal forest and includes the Onion Lake, Athabasca, Westlock plains and Whitefish and Frog Uplands **ecodistricts** (Strong and Thompson

1995). A second area is located immediately east of Edmonton in the Cooking Lake upland ecodistrict. The third and largest area parallels the Peace River in northwestern Alberta from Grande Prairie to Fort Vermillion and includes the Debolt, Dunvegan, Falher, Smoky, Grimshaw, Manning, High Level and Boyer plains ecodistricts (Map 1).

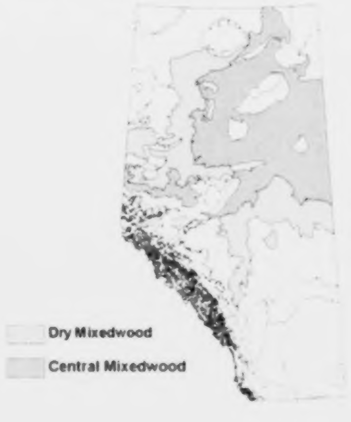
Mean summer temperature averages 13.8°C and winter temperatures average -10.5 °C, which is somewhat warmer than the Central Mixedwood subregion and somewhat cooler than the Parkland subregions. Mean annual precipitation averages 380 mm which is drier than the Central Mixedwood, but wetter than the Parkland subregions.

The **modal plant community** in this subregion is dominated by Aspen, with a variable understory dominated by rose, pea-vine, beaked hazelnut, saskatoon and marsh reedgrass. Jack pine stands are found on well drained, coarse-textured parent materials and poorly drained sites are dominated by black spruce, willows and sedge species.

Central Mixedwood subregion

The **Central Mixedwood (CM)** subregion is the largest in the province covering over 210,000 km^2 or nearly 32% of the province (Strong and Leggat 1992)(Map 1). Mean annual summer temperatures average 13.5 °C and winter temperatures average -13 °C, which is somewhat colder than the adjacent Dry Mixedwood subregion. Annual precipitation averages 397 mm of precipitation which is wetter than the Dry Mixedwood.

The modal plant communities are vegetated by aspen and balsam poplar with understories composed of a variety of herbs and deciduous shrubs. White spruce and balsam fir are the climatic climax species but are not well represented because of the frequent occurrence of fire. On dry, well drained, coarse-textured soils jack pine dominates and the poorly drained sites are dominated by black spruce, willows and sedge species. These communities are very similar to the Dry Mixedwood subregion, but drier conditions of the Dry Mixedwood favours formation of a number of native grassland communities which are not found in the Central Mixedwood.



Location of Dry and Central Mixedwood Subregions in Alberta

Approach and Methods of Classification

Approach: Ecological classification hierarchy and terminology

The system of classification in this guide was initially based on the community type approach of Mueggler (1988). Mueggler's system was chosen over the habitat type approach (Daubenmire 1952) or ecosystem association approach (Corns and Annas 1986) because it could classify plant communities irregardless of their successional status. However, as the philosophy of rangeland health and proper functioning condition of a site evolved, it became apparent (through data analysis) that there was a need to also organize the various plant communities based on their response to disturbance (i.e. disturbance vs. natural succession) within an area under similar environmental influences.

It was determined that the ecosystem classification system developed by Corns and Annas (1986) and Beckingham et al. (1996) could accommodate this additional requirement. Thus, the new system developed for rangelands is a combination of Mueggler (1988) and Beckingham et al. (1996). Consequently, this guide adopts a similar ecological unit classification hierarchy (**ecosite, ecosite phase, plant community**). In an effort to first, link the hierarchical system with the historic rangeland system, and second, to create a provincially standardized rangeland approach, slightly different classification terminology was developed. The new terms **ecological site** and **ecological site phase** (replacing Beckingham et al.'s [1996] ecosite and ecosite phase terms respectively), provide subtle distinction to recognize the blending of the old systems and still be recognizable to readers familiar with the original terminology. See figure 1 for a flow chart of both classification and general presentation of information.

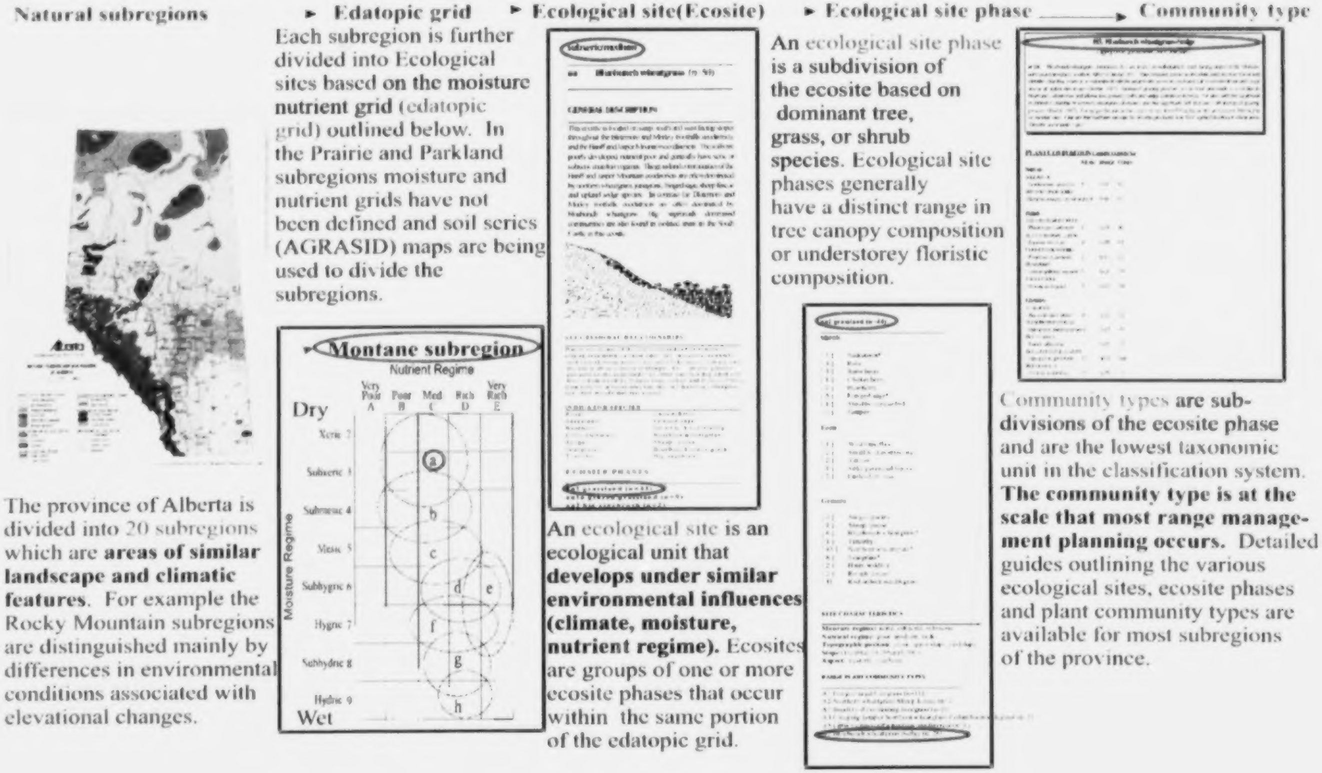
Methods: Plant community classification

Sampling for this guide occurred within the Dry and Central Mixedwood subregions . This guide outlines the classification of 685 plots described in the Dry Mixedwood and 210 plots described in the Central Mixedwood subregions.

The procedure for inventory of plots followed the Range Survey Manual (1992) and uses the **MF5 form**. A plot consisted of a 10 m x 10 m macroplot and ten randomly selected 1 m x 1 m microplots to record the canopy cover of shrubs and ten nested 20 cm x 50 cm microplots to record the canopy cover of forbs and grass. For a description of the methodology for riparian plots done in the Mixedwood subregions see (Thompson and Hansen 2004). The data for each site was analyzed using the multivariate analysis techniques of classification and ordination. Classification is the assignment of samples to classes or groups based on the similarity of species. A polythetic agglomerative approach was used to group the samples. This technique assigns each sample to a cluster which has a single measure. It then agglomerates these clusters into a hierarchy of larger and larger clusters until finally a single cluster contains all the samples (Gauch 1982). Cluster analysis was performed in SAS and Euclidean distance was used as the

Ecological classification of Alberta

The Rangeland Ecological Classification System is based on the ecological classification system of Alberta. This hierarchial classification structure for Alberta is outlined below starting at the larger scale natural subregions map and going down in scale to the plant community type.



Natural subregions ► **Edatopic grid** ► **Ecological site(Ecosite)** ► **Ecological site phase** ► **Community type**

The province of Alberta is divided into 20 subregions which are **areas of similar landscape and climatic features**. For example the Rocky Mountain subregions are distinguished mainly by differences in environmental conditions associated with elevational changes.

Each subregion is further divided into Ecological sites based **on the moisture nutrient grid** (edatopic grid) outlined below. In the Prairie and Parkland subregions moisture and nutrient grids have not been defined and soil series (AGRASID) maps are being used to divide the subregions.

An ecological site is an ecological unit that **develops under similar environmental influences (climate, moisture, nutrient regime).** Ecosites are groups of one or more ecosite phases that occur within the same portion of the edatopic grid.

An ecological site phase **is a subdivision of the ecosite based on dominant tree, grass, or shrub species.** Ecological site phases generally have a distinct range in tree canopy composition or understorey floristic composition.

Community types **are sub-divisions of the ecosite phase** and are the lowest taxonomic unit in the classification system. **The community type is at the scale that most range management planning occurs.** Detailed guides outlining the various ecological sites, ecosite phases and plant community types are available for most subregions of the province.

Figure 1. Layout of the Ecological Classification System for Alberta

Cluster Distance Measure and Ward's method was used in the Group Linkage Method. The groupings generated in cluster analysis were overlain on the site ordination to determine final groupings. Ordination was used to find relationships among species, communities and environmental variables. Ordination reduces the dimensionality of the data to 1-3 most important axes to which environmental gradients can be assigned. The ordination technique used in the analysis of the data was DECORANA (Detrended Correspondence Analysis). DECORANA detrends and rescales the axes thereby reducing the arching and compression of axes problems associated with other ordination techniques (Reciprocal averaging, Principle Components Analysis). Once final groupings were determined on the ordination specific environmental variables can be assigned to the variation outlined on the ordination axes.

Plant community type summaries were generated in SAS, by averaging plant species composition, range in composition, and percent constancy of occurrence, among vegetation inventory plots which were part of a community type. Environmental data was subsequently sorted into the same plant community groupings to create the plant community descriptions outlined in this guide. The number of sample plots on which the description was based is also provided (e.g. n=16).

Range Management Concepts and Methods

Ecologically sustainable stocking rates

Ecologically sustainable stocking rates (ESSR) values are suggested for each plant community. These values reflect the maximum number of livestock (e.g. hectares(ha)/animal unit month(AUM)) that can be supported by the plant community given inherent biophysical constraints and the ecological goal of sustainable health and proper functioning of the plant community. When the ESSR is multiplied by the area (e.g. ha) of a plant community polygon the result is termed **ecologically sustainable carrying capacity (ESCC)**, and is expressed as AUMs. Often the ESCC must be adjusted for management factors (e.g. reduced livestock distribution), management goals (e.g. improve rangeland health, multiple use and values, etc.), drought conditions, and other natural phenomena impacting the site (e.g. forage quality, fire, pests, etc.). This adjusted/reduced value is the **ecologically sustainable grazing capacity (ESGC)**. The ESGC values are not provided in the plant community guide because the necessary adjustments are determined by the rangeland resource manager.

Suggested ESSR values were determined from a combination of clipping studies, long-term rangeland reference area data, estimated production, and historical grazing experience. In order to sustain ecological health and function of the plant community, the ESSR was based on the allocation of 25 % of total production for forested plant community types, 50 % of total production for grass and shrub land types within the Dry and Central Mixedwood subregions and the forage requirements one animal unit (i.e. 455 kg of dry matter per month). The remaining biomass production (carry over), is allocated for the maintenance of ecological functions (e.g. nutrient cycling, viable diverse plant communities, hydrological function, and soil protection, etc.) and plant community services (forage production, habitat maintenance, etc.). The allocation of biomass production in this manor is well established, and supported, by the scientific community and the amount required, varies with Natural Subregion (Holechek et al. 1995).

Rangeland Health

Range health is determined by comparing the functioning of ecological processes on an area (e.g. plant community polygon) of rangeland to a standard (i.e. RPC) described within an ecological site description. An ecological site is similar to the concept of **range site**, but a broader list of characteristics are described. An ecological site is defined by the Task Group on Unity and Concepts (1995) as, "*a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation*". This guide can be used to determine the appropriate **reference range plant community**, within an ecological site, for a rangeland health assessment.

Rangeland health assessments are utilized to make a rapid determination of the ecological status of rangeland. We use range health terminology (healthy, healthy with problems, or unhealthy), to rank the ability of rangeland to perform certain ecological functions. These functions include: net primary production, maintenance of soil/site stability, capture and beneficial release of water, nutrient and energy cycling and plant species functional diversity. For a detailed description on how to assess rangeland health for various plant communities please refer to "*Rangeland Health Assessment for Grassland, Forest and Tame Pasture*" (Adams et al. 2003). A general range health category (Healthy, Healthy with problems, Unhealthy) has been added to each community type description, which can be used as a guide when doing range health assessments.

Range management objectives tend to favor the later stages of plant succession (late-seral to potential natural community (PNC) or good to excellent range condition) (Adams et al. 2003). Late seral plant communities tend to be superior in the efficient capture of solar energy, in cycling of organic matter and nutrients, in retaining moisture, in supporting wildlife habitat values and in providing the highest potential productivity for the site. In contrast, early seral stages represent plant communities with diminished ecological processes, which are less stable and more vulnerable to erosion and invasion by weeds and non-native species. They also have diminished resource values for livestock forage production, wildlife habitat and watershed protection (Adams et al. 2003). Healthy rangelands perform important ecological functions and provide a broader suite of goods and services. In most cases these late seral plant communities are used as reference range plant community (RPC), but sometimes management goals influence the choice of RPC (e.g. a cut block to be maintained as untimbered rangeland).

How to use the guide

Organization of the guide

This guide is an expansion of the Ecosites of Northern Alberta guide (Beckingham and Archibald 1996). It contains new information and it is recommended that the reader has access to relevant information from both guides. The community types in this guide are closely related to the ecosites and ecosite phases outlined in Ecosites of Northern Alberta (Beckingham and Archibald 1996), and are similarly arranged (e.g. Table 1). Table 1 and Table 6 are a reproduction of Figure 11 in Ecosites of Northern Alberta with community types in this guide further separated into reference range plant communities, successional communities and harvesting and fire communities. The "Successional community types" or "Harvesting and Fire succession" categories outline the successional sequence the community types undergo with heavy grazing pressure, harvesting or fire disturbance.

The majority of ecological site and ecological site phase summary tables as well as the plant community descriptions are recorded in Ecosites of Northern Alberta (Beckingham and Archibald 1996). Any new ecological sites and ecological site phases reported in this guide are summarized before the community type descriptions. The bulk of this guide is community descriptions which include information on the dominant plant species, canopy cover, environmental conditions, response to grazing, forage production and suggested ESSRs. When available, we have included plant community successional information to help us determine rangeland health and the successional relationships on an ecological site.

Generally, in both guides, ecological units within a subregion are classified by their position on the **edatopic grid** [a specific combination of soil moisture and soil nutrient regime] (Figures 3 and 6).

The information in this guide is presented and named by:

1. Subregion/Ecological area
   a. Dry Mixedwood [DM]
   b. Central Mixedwood [CM]
2. Dominant cover type
   a. Native grasslands and Shrublands [A]
   b. Tame forage communities [B]
   c. Deciduous forest [C]
   d. Mixedwood and Conifer forest [D]

NOTE: Each dominant cover type may overlay several ecological sites and ecological site phases. For example DMA community types occur in 8 ecological sites [aa, bb, c, d, dd, f, k, and l].

3. Community types are presented and named by:
   a. Subregion/Ecological area and dominant cover type [e.g. DMA].
   b. Position on the edatopic grid. Generally, communities are named/numbered from low moisture /nutrient status to high moisture/nutrient status. For example, DMA**3** is a Plains wormwood/Sedge community on the"aa" xeric/poor ecological site, while DMA**7** is a Saskatoon-snowberry/hairy wild rye community type on the "d" mesic medium ecological site.

NOTE: As additional information is collected and new ecological units are identified and described, an attempt is made to fit them into the pre-existing ones. At times the usual conventions of naming and organization have to be compromised to accommodate the new units. Sometimes it was necessary to add an additional letter to an existing name to wedge the new unit into the appropriate place within the pre-existing ones. For example, the extra letter in the new ecological site "dd" and the pre-existing ecological site "d".

New information presented

For the most part ecological sites and ecological site phases are the same in both this and the Ecosites of Northern Alberta guide (Beckingham and Archibald 1996), particularly for the forested community types. Analysis of plot data identified a number of new ecological sites for the grass and shrubland community types which were then described.

1. **Dry Mixedwood** (Table 1)
    - a. New ecological sites and *New ecological site phases*
        - i (**aa**)(xeric/poor) grassland
            1. ***(aa1)** Plains wormwood grassland*
        - ii (**bb**)(subxeric/medium) grassland
            1. ***(bb1)** Western porcupine grass grassland*
            2. ***(bb2)** Northern wheat grass grassland*
        - iii (**dd**)(mesic/rich) grassland
            1. ***(dd1)** California oatgrass-slender wheat grass grassland*
    - b. *New ecological site phases (successional)* within pre-existing ecological sites
        1. ***(d1a)** grazed Aspen*
        2. ***(d1b)** harvested Aspen*
        3. ***(d4)** Shrubland*
        4. ***(e4)** dogwood shrubland*
        5. ***(f4)** horsetail/willow*
        6. ***(f5)** horsetail/White birch*
        7. ***(g2)** Saline*
        8. ***(j3)** grassland poor fen*
        9. ***(k2a)** grazed willow*
        10. ***(k3a)** grazed meadow*

2. **Central Mixedwood** (Table 6)
    - a. New ecological sites and *New ecological site phases*
        - i (**aa**)(xeric/poor) grassland
            1. ***(aa1)** Plains wormwood grassland*
    - b. *New ecological site phases* within pre-existing ecological sites
        1. ***(d4)** Shrubland*
        2. ***(d1a)** grazed Aspen*
        3. ***(d1c)** burned Aspen*
        4. ***(d3c)** burned White Spruce*
        5. ***(e4)** dogwood shrubland*
        6. ***(j3)** grassland poor fen*
        7. ***(k2a)** grazed willow*

Identifying plant community types

There are two methods to identify plant community types in this guide. The first method uses a key within the dominant cover categories of native grass and shrubland, tame forage, deciduous, or mixedwood and conifer. The second method involves using soil moisture and nutrient information and indicator species to identify plant community types.

Method 1. Use dichotomous key within dominant cover categories

Step 1. Pick the appropriate subregion [**D**RY **M**IXEDWOOD or **C**ENTRAL **M**IXEDWOOD].

Step 2. Pick the appropriate category the community type is in within each subregion.

- **A.** The area does not have an overstory tree canopy and has not been cleared and broken, the community will fall under the NATIVE GRASSLANDS and SHRUBLANDS category.
- **B.** The area has been cleared of trees, broken, and seeded down to tame forage species such as timothy or creeping red fescue, the community will be in the TAME GRASS category.
- **C.** The DECIDUOUS category includes all plant communities that are dominated by deciduous tree species. Deciduous cutblocks are included here.
- **D.** Communities which have begun to undergo succession from a deciduous to a conifer dominated overstory with an overstory cover greater than 15% for both deciduous and coniferous species fall into the MIXEDWOOD category. Those communities dominated by a conifer overstory, White spruce, Black spruce or Jack pine are classified in the CONIFER category.

Step 3. Turn to the appropriate section [e.g. DMA] and work through the key provided to determine the community type of the site you are evaluating.

Step 4. This step is necessary only if you are completing a rangeland health assessment. In order to determine the health status of the site in question, you must decide the appropriate reference range plant community [**RPC**] to compare it to. Depending on the type of disturbance [grazing, timber operations, etc.] successional pathways may differ. The RPC would usually be the plant community that is at the start of the pathway. Management goals can influence the choice of RPC. For example, if an Aspen rose community on a "d" ecological site [e.g. DMC2] had undergone timber harvest, had not been seeded with tame forage species and the goal was to maintain it as a native community with out a mature Aspen canopy, the appropriate RPC would be DMC10. Alternatively, if the site was to be cultivated, seeded and managed as a tame pasture, the appropriate RPC might be DMB12.

Method 2. Use edatope and indicator species

Step 1. Pick the appropriate subregion [**D**RY **M**IXEDWOOD or **C**ENTRAL **M**IXEDWOOD]. [e.g. DM]

Step 2. Determine the appropriate ecological site based on position on the edatopic grid for the subregion. First decide soil moisture status, then soil nutrient status of the site in question. Use any available soils information to assist [e.g. **AGRASID**, or **PLC**]. [e.g. DM - mesic/medium is the "d" low-bush cranberry ecological site or DM-d]

Step 3. Look up the possible ecological site phases within the selected ecological site on Table 1 or 6. [e.g. DM-d has "d1" low-bush cranberry Aspen; "d2" low-bush cranberry Aspen-White spruce; "d3"low-bush cranberry White spruce; and "d4" shrubland.]

Step 4. Select the appropriate ecological site phase by first determining the dominant overstory [i.e the highest layer of vegetation which can be either a tree, shrub, or grass species]. [e.g. For a site dominated by Aspen (i.e. DM-d1), the appropriate ecological site phase is "d1" low-bush cranberry Aspen.]

Step 5. Select the appropriate community type. Within the selected ecological site phase, use indicator understory species to choose the closest matching community type. This information is shown in table 1 or 6 as part of the community type name [e.g. DMC7 Aspen/Saskatoon]. It is also detailed in the specific community type descriptions [i.e. species with the highest average canopy cover and consistency]. At times, the community in question does not seem to match any of the known/reported types. When this happens, consider the following information in the detailed community type descriptions.

1. In the general description text.
    a. The number of plots utilized to describe the community [**n=number of plots**]. The greater the number of plots [i.e. information available], the greater the level of confidence in the clarity and accuracy of the description including the suggested ESSR.
    b. Information about where the community is found on the landscape and response to disturbance and natural succession. Use this information together with your field experience to determine the likely hood of a similar situation occurring on the site in question.
2. Under Plant Composition heading.
    a. The range of a plant species canopy cover. For example, a species with a range of 0-25% may not always be visible on the site, having 0% canopy cover or it may have up to 25% cover.
    b. The consistency value. This indicates the percentage of the plots that the species was actually present. So if n=16 and consistency was 75%, then the species occurred in 12 of the plots and not in 4 of them.

Step 6. This step is the same as step 4 in method 1 and is necessary only if you are completing a rangeland health assessment. In order to determine the health status of the site in question, you must decide the appropriate reference range plant community [**RPC**] to compare it to. Depending on the type of disturbance [grazing, timber operations, etc.] successional pathways may differ. The RPC would usually be the plant community that is at the start of the pathway. Management goals can influence the choice of RPC. For example, if an Aspen rose community on a "d" ecological site [e.g. DMC2] had undergone timber harvest, had not been seeded with tame forage species and the goal was to maintain it as a native community with out a mature Aspen canopy, the appropriate RPC would be DMC10. Alternatively, if the site was to be cultivated, seeded and managed as a tame pasture, the appropriate RPC might be DMB12.

Results

This guide represents the analysis of 895 grass, shrubland, conifer and deciduous plots described in the Dry and Central Mixedwood subregions. These types are split into:

Dry Mixedwood subregion

A. Native grasslands and shrubland	33 types
B. Tame forage communities	13 types
C. Deciduous community types	21 types
D. Mixedwood and Conifer community types	14 types

Central Mixedwood subregion

A. Native grassland and shrubland	18 types
B. Tame forage communities	7 types
C. Deciduous community types	18 types
D. Mixedwood and Conifer community types	12 types

The dominant plant species, canopy cover, environmental conditions, forage production and suggested stocking rate are outlined for each community type.

Table 1. Ecological sites, ecological site phases, forested and range plant community types for the Dry Mixedwood subregion (adapted from Beckingham and Archibald 1996)(see Figure 2 for a diagram outlining the Ecological sites in the landscape of the Boreal Mixedwood subregions).

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
aa grassland (xeric/poor)	aa1 plains wormwood		DMA3. Plains wormwood/Sedge		
a lichen (subxeric/poor)	a1 lichen Pj	a1.1 Pj/bearberry/lichen			
		a1.2 Pj/blueberry/lichen			
		a1.3 Pj/green alder/lichen	DMD1 Pj/Alder		
bb grassland (subxeric/medium)	bb1 Western porcupine grass		DMA5 Western porcupine grass-Sedge/Fringed sage		
	bb2 Northern wheatgrass		DMA6 Northern wheatgrass -Junegrass/Fringed sage		
b blueberry (submesic/medium)	b1 blueberry Pj-Aw	b1.1 Pj-Aw/blueberry - bearberry	DMD2 Pj-Aw/Bearberry		
		b1.2 Pj-Aw/blueberry - green alder			
		b1.3 Pj-Aw/blueberry - Labrador tea			
	b2 blueberry Aw(Bw)	b2.1 Aw(Bw)/blueberry - bearberry	DMC1. Aw/Dwarf bilberry/Bearberry/Mtn. ricegrass DMC1a. Aw/Blueberry		
		b2.2 Aw(Bw)/blueberry - green alder			
		b2.3 Aw(Bw)/blueberry - Labrador tea			

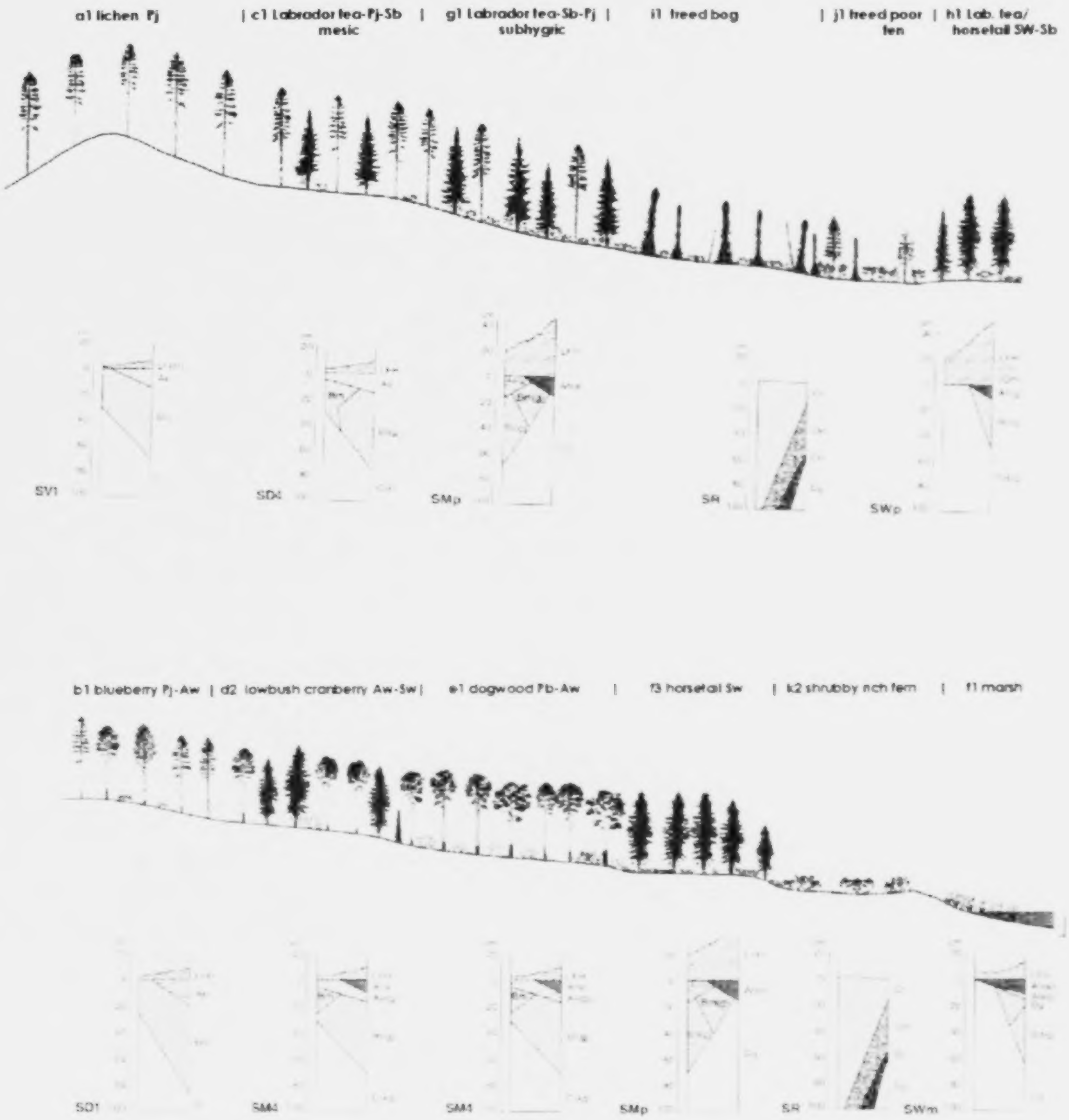
Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
	b3 blueberry Aw-Sw	b3.1 Aw-Sw/blueberry - bearberry	DMD2a Aw-Sw/Bearberry		
		b3.2 Aw-Sw/blueberry - green alder			
		b3.3 Aw-Sw/blueberry - Labrador tea			
	b4 blueberry Sw-Pj	b4.1 Sw-Pj/blueberry - bearberry	DMD3 Sw/Buffaloberry/Bearberry		
		b4.2 Sw-Pj/blueberry - green alder			
c Labrador tea - mesic (mesic/poor)	c1 Labrador tea - mesic Pj-Sb	c1.1 Pj-Sb/Labrador tea/feather moss			
		c1.2 Pj-Sb/green alder/feather moss			
		c1.3 Pj-Sb/feather moss			
d low-bush cranberry (mesic/medium)	d1 low-bush cranberry Aw	d1.1 Aw/Canada buffalo-berry	DMC5. Aw/Buffaloberry		
		d1.2 Aw/saskatoon-pin cherry	DMC7. Aw/Saskatoon		
		d1.3 Aw/beaked hazelnut	DMC4. Aw-Pb/Hazelnut		
		d1.4 Aw/green alder	DMC6. Aw/Alder		
		d1.5 Aw/low-bush cranberry			
		d1.6 Aw/rose	DMC2. Aw/Rose/Tall forb	DMC3. Aw/Rose/Low forb DMC3a Aw/Dandelion/ Kentucky bluegrass	DMC10. Deciduous cutblocks

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
		d1.7 Aw/beaked willow	DMC8a Pb-Aw/Willow		
		d1.8 Aw/forb			
		d1.9 Aw/balsam fir			
	d2 low-bush cranberry Aw-Sw	d2.1 Aw-Sw/Canada buffalo-berry			
		d2.2 Aw-Sw/beaked hazelnut			
		d2.3 Aw-Sw/green alder			
		d2.4 Aw-Sw/low-bush cranberry	DMD10 Sw-Aw/Low bush cranberry		
		d2.5 Aw-Sw/rose	DMD5 Aw-Sw/Rose/Marsh reedgrass		
		d2.6 Aw-Sw/forb			
		d2.8 Aw-Sw/balsam fir/feather moss			
		d2.9 Aw-Sw/feather moss			
	d3 low-bush cranberry Sw	d3.1 Sw/Canada buffalo-berry			
		d3.2 Sw/green alder	DMD4 Sw/Hazelnut/Moss		
		d3.3 Sw/low-bush cranberry	DMD7 Sw-Pb-Aw/Rose/Twinflower		
		d3.4 Sw/balsam fir/feather moss			
		d3.5 Sw/feather moss	DMD11 Sw/Moss		DMD12 Sw-Bw/Raspberry
	d4 shrubland		DMA7. Saskatoon -Snowberry/ Hairy wildrye	DMA8. Saskatoon/ Sweet clover/ Smooth brome	

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
dd grassland (mesic/rich)	dd1 california oatgrass-slender wheatgrass		DMA4 Purple oatgrass/Sedge - California oatgrass DMA4a Veiny meadow rue/Slender wheatgrass-Fringed brome		
e dogwood (subhygric/rich)	e1 dogwood Pb-Aw	e1.1 Pb-Aw/dogwood/fern	DMC8. Pb-Aw/Red osier dogwood DMC13 Pb-Aw/Silverberry DMC14 Pb/Snowberry	DMC18 Pb-Bw/Kentucky bluegrass DMC19 Pb/Smooth brome	
		e1.2 Pb-Aw/bracted honeysuckle/fern	DMC16. Pb/Honeysuckle		
		e1.3 Pb-Aw/river alder/fern	DMC12 Pb/River alder		
	e2 dogwood Pb-Sw	e2.1 Pb-Sw/dogwood/fern	DMD13 Sw-Pb/Red osier dogwood		
		e2.2 Pb-Sw/bracted honeysuckle/fern	DMD6 Aw-Pb-Sw/Willow/Wild sarsaparilla		
		e2.3 Pb-Sw/river alder-green alder/fern			
		e2.4 Pb-Sw/balsam fir/fern			
		e2.5 Pb-Sw/fern/feather moss			
	e3 dogwood Sw	e3.1 Sw/dogwood/fern			
		e3.2 Sw/green alder-river alder/fern			
		e3.3 Sw/balsam fir/fern			
		e3.4 Pb-Sw/fern/feather moss			
	e4 dogwood shrubland		DMA17 Red osier dogwood/Marsh reedgrass	DMA18 Silverberry/ Smooth brome	

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
f horsetail (hygric/rich)	f1 horsetail Pb-Aw	f1.1 Pb-Aw/horsetail	DMC9. Pb-Aw/Horsetail		
	f2 horsetail Pb-Sw	f2.1 Pb-Sw/horsetail			
	f3 horsetail Sw	f3.1 Sw-horsetail	DMD14 Sw/Horsetail		
		f3.2 Sw/feather moss			
	f4 horsetail/willow		DMA12. Willow/Horsetail/Marsh reedgrass DMA15. Sandbar-Yellow willow DMA16. Bebb willow/M. reedgrass		
	f5 horsetail Bw		DMA13. River alder/Horsetail		
g Labrador tea - subhygric (subhygric/poor)	g1 Labrador tea - subhygric Sb-Pj	g1.1 Sb-Pj/Labrador tea/feather moss			
		g1.2 Sb-Pj/feather moss			
	g2 saline-alkaline areas		DMA25 Rush DMA27 Three square rush DMA28 Prairie rush DMA29 Nuttall's saltgrass	DMA30 Foxtail barley	
h Labrador tea/horsetail (hygric/medium)	h1 Labrador tea/horsetail Sw-Sb	h1.1 Sw-Sb/Labrador tea/horsetail			
		h1.2 Sw-Sb/Labrador tea/feather moss			
i bog (subhygric/very poor)	i1 treed bog	i1.1 Sb/Labrador tea/cloudberry/peat moss	DMD9 Sb-Lt/Labrador tea/Moss		
	i2 shrubby bog	i2.1 Sb/Labrador tea/cloudberry/peat moss			
j poor fen (subhydric/medium)	j1 treed poor fen	j1.1 Sb-Lt/dwarf birch/sedge/peat moss	DMD8 Sb/Willow/Moss		DMC16 Bw/Labrador tea
	j2 shrubby poor fen	j2.1 Sb-Lt/dwarf birch/sedge/peat moss	DMA19 Bog willow		

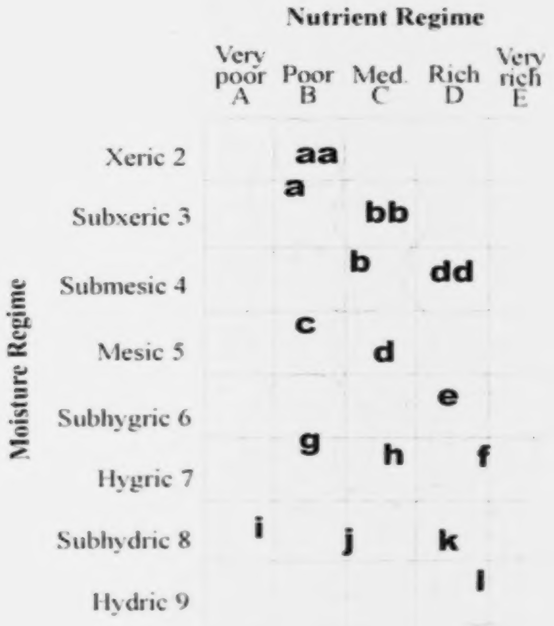
Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community types	Harvesting and Fire succession
	j3 grassland poor fen		DMA24 Two stamened sedge		
k rich fen (subhydric/rich)	k1 treed rich fen	k1.1 Lt/dwarf birch/sedge/golden moss	DMC15 Pb/Reedgrass		DMC12 Bw/Raspberry
	k2 shrubby rich fen	k2.1 dwarf birch/sedge/golden moss			
		k2.2 willow/sedge/brown moss	DMA10. Willow/Sedge	DMA14 Willow/ Kentucky bluegrass /Dandelion	
		k2.3 willow/marsh reed grass	DMA10a Willow/Marsh reedgrass	DMA11. Willow/Marsh reedgrass-Kentucky bluegrass	
	k3 graminoid rich fen	k3.1 sedge fen	DMA1. Sedge meadow		
		k3.2 marsh reed grass fen	DMA2. Marsh reedgrass meadow	DMA9. Kentucky bluegrass/Dandelion	
l marsh (hydric/rich)	l1 marsh	l1.1 cattail marsh	DMA1a Bulrush-Cattail DMA20 Swamp horsetail		
		l1.2 reed grass marsh	DMA21 Tall manna grass DMA22 Common reedgrass DMA23 Reed canary grass DMA26 Creeping spike rush		
		l1.3 bulrush marsh			


a1 lichen Pj
c1 Labrador tea-Pj-Sb mesic
g1 Labrador tea-Sb-Pj subhygric
i1 treed bog
j1 treed poor fen
h1 Lab. tea/ horsetail SW-Sb
SV1
SD4
SMp
SR
SWp
b1 blueberry Pj-Aw
d2 lowbush cranberry Aw-Sw
e1 dogwood Pb-Aw
f3 horsetail Sw
k2 shrubby rich fen
f1 marsh
SD1
SM4
SM4
SMp
SR
SWm

Source: Figure 12 Schematic cross section of the Boreal Mixedwood represented by common ecosite phases and soil types. (Beckingham and Archibald 1996)

Figure 2. Landscape diagram of the Ecological sites described in the Boreal Mixedwood subregions.

Figure 3. Edatopic grid for the Dry Mixedwood subregion


Nutrient Regime
Very poor A
Poor B
Med. C
Rich D
Very rich E
Moisture Regime
Xeric 2
Subxeric 3
Submesic 4
Mesic 5
Subhygric 6
Hygric 7
Subhydric 8
Hydric 9
aa
a
bb
b
dd
c
d
e
g
h
f
i
j
k
l

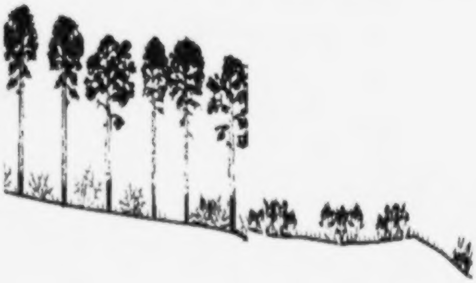
Ecological sites of the Dry Mixedwood subregion:

aa	**grassland**	(xeric/poor)
a	**lichen**	(subxeric/poor)
bb	**grassland**	(subxeric/medium)
b	**blueberry**	(submesic/medium)
c	**Labrador tea-mesic**	(mesic/poor)
d	**low-bush cranberry**	(mesic/medium)
dd	**grassland**	(mesic/rich)
e	**dogwood**	(subhygric/rich)
f	**horsetail**	(hygric/rich)
g	**Labrador tea-subhygric**	(subhygric/poor)
h	**Labrador tea/horsetail**	(hygric/medium)
i	**bog**	(subhygric/very poor)
j	**poor fen**	(subhydric/medium)
k	**rich fen**	(subhydric/rich)
l	**marsh**	(hydric/rich)

aa grass/shrubland (n=2) xeric/poor

GENERAL DESCRIPTION

This ecosite is associated with small grassy openings within Jack pine and aspen forests. This site has dry conditions, with rapidly drained, nutrient poor soils. The parent materials are generally coarse textured eolian, glacialfluvial or fluvial eolian in origin. The high insolation and dry site conditions favour the growth of grassland species. These include Northern ricegrass, slender wheatgrass, Sedge, bearberry and plains wormwood In the moister sites (lower slope positions) aspen and shrubs (saskatoon, rose) are quite common.



SUCCESSIONAL RELATIONSHIPS

Due to the nature of the site grasslands often remain the climax vegetation on these sites. In the moister lower slope positions shrubs often dominate the site with succession to aspen and spruce. On the drier hilltops and midslopes grasslands dominated by plains wormwood and northern ricegrass usually represent the climax vegetation. Heavy grazing pressure on the grasslands can often lead to a degraded site that is dominated by kentucky bluegrass on the moister sites.

INDICATOR SPECIES

Saskatoon
Rose
Snowberry
Beaked hazelnut
Plains wormwood
Bearberry
Strawberry
Sheep fescue
Northern ricegrass
Slender wheatgrass
Hairy wildrye

SITE CHARACTERISTICS

Moisture regime: xeric, subxeric, submesic
Nutrient regime: poor, medium
Topographic position: crest, upper, mid to lower slope
Slope: (0-2%) (5-10%)
Aspect: south, southwest, west

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mor
Surface texture: SL,L
Effective texture: SL, S
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: E, GF,FE,F
Soil subgroup: O.EB, E.DYB O.R, E.EB

ECOSITE PHASES

aa1 Plains wormwood (2)

aa1 Plains wormwood (n=2)

CHARACTERISTIC SPECIES

Forb

[8]	Scouring rush
[12]	Plains wormwood*
[1]	Low goldenrod
[1]	American vetch
[1]	Yellow beardstongue
[10]	Common yarrow

Grasses

[18]	Sedge species*
[2]	Sheep fescue*
[2]	Creeping red fescue
[5]	Kentucky bluegrass

SITE CHARACTERISTICS

Moisture regime: xeric, subxeric
Nutrient regime: poor,
Topographic position: crest, upper slope, midslope
Slope: 5-10%, 10-20%
Aspect: westerly, southerly

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mor
Surface texture: S, SL
Effective texture: S
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: E, GF, FE
Soil subgroup: O.R, O.EB, E.EB

RANGE PLANT COMMUNITY TYPES

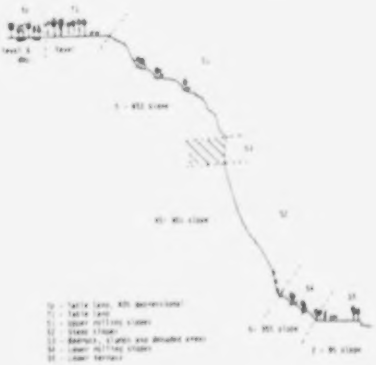
DMA3. Plains wormwood/Sedge

bb grassland (n=20)

subxeric/medium

GENERAL DESCRIPTION

This ecosite is associated with the south and west facing slopes along the Peace, Smoky and Wapiti rivers in the Dry Mixedwood subregion of Northwestern Alberta. This site has dry conditions, with rapidly drained, nutrient rich soils. The parent materials are generally glacio lacustrine, morainal, colluvial and fluvial in origin. The high insolation and dry site conditions favour the growth of grassland species. These include Western porcupine grass, Northern wheatgrass, Junegrass, Sedge and Fringed sage. In the moister draws aspen and shrubs (snowberry, saskatoon, chokecherry) are quite common.



(Adams 1981)

SUCCESSIONAL RELATIONSHIPS

Due to the nature of the site grasslands often remain the climax vegetation on these sites. In the moister draws and lower slope positions aspen and spruce can succeed onto these grasslands. Frequent fire will often control the succession to trees in the moist areas. Heavy grazing pressure on the grasslands can often lead to a degraded site that is dominated by fringed sage, upland sedges and junegrass.

INDICATOR SPECIES

Western porcupine grass
Northern wheatgrass
Junegrass
Upland sedge
Fringed sage
Green needlegrass
Saskatoon
Snowberry

SITE CHARACTERISTICS

Moisture regime: subxeric, submesic
Nutrient regime: poor, medium, rich
Topographic position: crest, upper slope, midslope
Slope: 27%,45%,90%
Aspect: south, southwest, west

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mull
Surface texture: L,CL
Effective texture: C, SCL
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: GF, M, C, F
Soil subgroup: O.BL, R.BL, O.MB, S.GL,CA.DB,O.B,O.EB

ECOSITE PHASES

bb1 Western porcupine grass (7)
bb2 Northern wheatgrass (13)

bb1 Western porcupine grass (n=7)

CHARACTERISTIC SPECIES

Shrub

[8]	Fringed sage*
[1]	Saskatoon
[2]	Snowberry

Forb

[1]	Little leaved everlasting
[1]	White camas
[1]	Loose flowered milkvetch
[2]	Prairie crocus
[1]	Wild blue flax

Grasses

[15]	Western porcupine grass*
[15]	Sedge species*
[5]	Green needle grass*
[6]	Junegrass*
[1]	Western wheatgrass
[1]	Kentucky bluegrass
[2]	Northern wheatgrass

SITE CHARACTERISTICS

Moisture regime: subxeric, submesic
Nutrient regime: medium, rich
Topographic position: crest, upper slope, midslope
Slope: 25-35%, 35-72%
Aspect: westerly, southerly

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mull
Surface texture: L,CL
Effective texture: C, SCL
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: GF, M, C, F
Soil subgroup: O.BL, R.BL, O.MB, S.GL, CA.DB,O.B, O.EB

RANGE PLANT COMMUNITY TYPES

DMA5. Western porcupine grass-Sedge/Fringed sage

bb2 Northern wheatgrass (n=13)

CHARACTERISTIC SPECIES

Shrub

[6]	Fringed sage*
[6]	Saskatoon
[3]	Snowberry
[3]	Rose

Forb

[1]	Little leaved everlasting
[1]	Lindley's aster
[1]	Showy locoweed
[1]	Cut leaved anemone
[1]	Wild blue flax
[2]	Dandelion

Grasses

[3]	Sedge species*
[2]	Green needle grass*
[5]	Junegrass*
[3]	Western wheatgrass
[1]	Richardson's needlegrass
[10]	Northern wheatgrass*

SITE CHARACTERISTICS

Moisture regime: xeric, subxeric
Nutrient regime: poor, medium
Topographic position: crest, upper slope, midslope
Slope: 10-90%
Aspect: westerly, southerly

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mull
Surface texture: L,CL
Effective texture: C, SCL
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: GF, M, C, F
Soil subgroup: O.R, O.MB, O.EB, O.B, SZ.GL

RANGE PLANT COMMUNITY TYPES

DMA6. Northern wheatgrass-Junegrass/Fringed sage

d4 Saskatoon-Snowberry (n=11)

CHARACTERISTIC SPECIES

Tree

[4]	Aspen

Shrub

[2]	Beaked hazelnut
[17]	Saskatoon*
[15]	Snowberry*
[23]	Rose*

Forb

[3]	Northern bedstraw
[1]	Strawberry
[2]	Yellow peavine
[2]	Lindley's aster
[2]	American vetch
[1]	Bearberry
[2]	Common yarrow

Grasses

[4]	Sedge species*
[1]	Northern ricegrass
[3]	Smooth brome
[2]	Slender wheatgrass*
[1]	Kentucky bluegrass
[2]	Hairy wildrye

SITE CHARACTERISTICS

Moisture regime: submesic, mesic
Nutrient regime: medium
Topographic position: lower slope, midslope
Slope: 0-72%
Aspect: westerly, southerly

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mor
Surface texture: L, SL
Effective texture: S, SL
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: GF, M, C, F, GL
Soil subgroup: O.R, O.MB, O.EB, DG.SO, BR.GL

RANGE PLANT COMMUNITY TYPES

DMA7. Saskatoon-Snowberry/Hairy wildrye
DMA8. Saskatoon/Sweet clover/Smooth brome

d1a Grazed Aw (n=66)

CHARACTERISTIC SPECIES

Tree

[48]	Aspen*
[1]	Balsam poplar

Shrub

[6]	Raspberry
[1]	Low bush cranberry
[4]	Snowberry
[14]	Rose*

Forb

[2]	Northern bedstraw
[4]	Strawberry*
[4]	Yellow peavine
[4]	Bunchberry*
[3]	Lindley's aster
[3]	Wild lily-of-the-valley*
[3]	Dewberry
[4]	Wintergreen*
[1]	Dandelion*
[1]	Clover species*

Grasses

[2]	Marsh reedgrass
[3]	Hairy wildrye
[1]	Purple oatgrass*
[2]	Slender wheatgrass*
[1]	Kentucky bluegrass

SITE CHARACTERISTICS

Moisture regime:, mesic
Nutrient regime: medium
Topographic position: mid, lower slope, level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15), (0-5)
Humus form: mor, raw moder
Surface texture: SiL, SL, S, L
Effective texture: C, SiC, CL, SCL, SiCL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well, imperfect
Parent material: GF, M, GL
Soil subgroup: O.GL, GR.GL, GL.GL

RANGE PLANT COMMUNITY TYPES

DMC3. Aw/Rose/Low forb
DMC3a. Aw-Pb/Dandelion/Kentucky bluegrass

d1b Harvested Aw (n=4)

CHARACTERISTIC SPECIES

Tree

[20]	Aspen
[1]	Balsam poplar

Shrub

[5]	Raspberry
[2]	Saskatoon
[3]	Snowberry
[19]	Rose
[2]	Low bush cranberry

Forb

[4]	Northern bedstraw
[21]	Strawberry
[1]	Yellow peavine
[4]	Lindley's aster
[1]	American vetch
[4]	Fireweed
[1]	Bunchberry

Grasses

[17]	Marsh reedgrass
[2]	Northern ricegrass
[1]	Hairy wildrye
[1]	Slender wheatgrass
[2]	Timothy

SITE CHARACTERISTICS

Moisture regime:, mesic
Nutrient regime: medium
Topographic position: mid, lower slope, level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15), (0-5)
Humus form: mor, raw moder
Surface texture: SiL, SL, S, L
Effective texture: C, SiC, CL, SCL, SiCL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well, imperfect
Parent material: GF, M, GL
Soil subgroup: O.GL, GR.GL, GL.GL

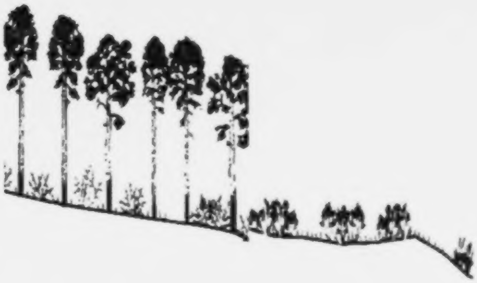
RANGE PLANT COMMUNITY TYPES

DMC10. Deciduous cutblocks

dd grassland (n=6)

GENERAL DESCRIPTION

This ecosite is associated with the remnant prairies located throughout the Peace River district of Alberta. This site is associated with the dark colored solonetzic and chernomzic soils of the region. The parent materials are generally fine textured, slightly saline, fluvial, lacustrine or lacustrine-till in origin. The hard impermeable B horizon and slightly saline conditions tend to favour the growth of grassland species. These include Western porcupine grass, slender wheatgrass, sedge, California oatgrass and fringed sage Trees appear to be gradually moving into the old prairie remnants where the unfavorable characteristics of the solonetzic soils have been improved from many of the agricultural practices in the area.



SUCCESSIONAL RELATIONSHIPS

Due to the nature of the site grasslands often remain the climax vegetation on these sites. However, industrial activities have greatly modified the original vegetation cover. Heavy grazing pressure on the remnant grasslands can often lead to a degraded site that is dominated by purple oatgrass, sedge, Kentucky bluegrass, dandelion and smooth brome.

INDICATOR SPECIES

Saskatoon
Rose
Snowberry
Strawberry
Veiny meadow rue
Dandelion
Common yarrow

California oatgrass
Sedge species
Kentucky bluegrass
Slender wheatgrass
Western porcupine grass
Purple oatgrass

mesic/rich

SITE CHARACTERISTICS

Moisture regime: mesic, submesic
Nutrient regime: medium, rich
Topographic position: level, lower slope
Slope: (0-5%)
Aspect: south, southwest, west

SOIL CHARACTERISTICS

Organic thickness: (0-5)
Humus form: mull
Surface texture: L, SiCL
Effective texture: C, CL
Depth to Mottles/Gley: none
Drainage: well, mod. well
Parent material: L
Soil subgroup: DB.SO, BL.SO, DB.SS, BL.SS, O.DB, R.DB

ECOSITE PHASES

dd1 california oatgrass-slender wheatgrass

dd1 california oatgrass-slender wheatgrass (n=6)

CHARACTERISTIC SPECIES

Shrub

[1]	Saskatoon
[8]	Snowberry*
[4]	Rose

Forb

[2]	Northern bedstraw
[9]	Strawberry
[5]	Common yarrow
[1]	Three flowered avens
[5]	Dandelion
[10]	Veiny meadow rue*
[4]	American vetch

Grasses

[6]	California oatgrass*
[7]	Western porcupine grass*
[9]	Sedge species*
[14]	Slender wheatgrass*
[8]	Kentucky bluegrass
[3]	Junegrass
[17]	Purple oatgrass*

SITE CHARACTERISTICS

Moisture regime: mesic, submesic
Nutrient regime: medium, rich
Topographic position: level, lower slope
Slope: (0-5%)
Aspect: south, southwest, west

SOIL CHARACTERISTICS

Organic thickness: (0-5)
Humus form: mull
Surface texture: L, SiCL
Effective texture: C, CL
Depth to Mottles/Gley: none
Drainage: well, mod. well
Parent material: L
Soil subgroup: DB.SO, BL.SO, DB.SS, BL.SS

RANGE PLANT COMMUNITY TYPES

DMA4. Purple oatgrass-California oatgrass-Sedge
DMA4a. Veiny meadow rue/Slender wheatgrass-Fringed brome

e4 **dogwood shrubland** (n=10)

CHARACTERISTIC SPECIES

Trees

[1]	Balsam poplar

Shrub

[25]	Red osier dogwood
[5]	Snowberry*
[9]	Rose
[32]	Silverberry

Forb

[2]	Horsetail
[3]	Strawberry
[1]	Common yarrow
[3]	Veiny meadow rue*
[2]	American vetch

Grasses

[3]	Smooth brome
[3]	Marsh reedgrass
[1]	Sedge species*
[2]	Kentucky bluegrass

SITE CHARACTERISTICS

Moisture regime: mesic, subhygric
Nutrient regime: rich
Topographic position: level, lower slope
Slope: (0-5%)
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15)
Humus form: mor
Surface texture: SiL, Si, SiC, CL
Effective texture: SiC, C,
Depth to Mottles/Gley: (0-25)
Drainage: imperfect, poor, mod. well, well
Parent material: F, GL, M
Soil subgroup: O.LG, O.G, CU.R, GLCU.R

RANGE PLANT COMMUNITY TYPES

DMA17. Red osier dogwood/Marsh reedgrass
DMA18. Silverberry/Smooth brome

f4 horsetail/ Willow (n=39)

CHARACTERISTIC SPECIES

Shrub

[65]	Willow*
[1]	Bracted honeysuckle
[10]	Rose

Forb

[18]	Horsetail*
[9]	Arrow leaved coltsfoot
[8]	Lindley's aster
[8]	Bishop's cap
[5]	Strawberry
[4]	Veiny meadow rue
[4]	Dewberry
[2]	Fireweed

Grasses

[23]	Marsh reedgrass*
[1]	Hair-like sedge
[2]	Slender wheatgrass

SITE CHARACTERISTICS

Moisture regime: subhygric, hygric, mesic
Nutrient regime: rich, medium
Topographic position: level, lower slope, toe
Slope: level (2-5%)
Aspect: level, northerly

SOIL CHARACTERISTICS

Organic thickness: (6-15)
Humus form: mor
Surface texture: SiL, Si, SiC, CL
Effective texture: SiC, C,
Depth to Mottles/Gley: (0-25)
Drainage: imperfect, poor, mod. well, well
Parent material: F, GL, M
Soil subgroup: O.LG, O.G, CU.R, GLCU.R

RANGE PLANT COMMUNITY TYPES

DMA12. Willow/Horsetail/Marsh reedgrass
DMA15. Sandbar willow
DMA16. Bebb willow/Marsh reedgrass

f5 horsetail/ Bw (n=6)

CHARACTERISTIC SPECIES

Tree

[25] Paper birch*
[5] Larch
[3] White spruce

Shrub

[8] Bracted honeysuckle
[45] River alder*
[3] Willow

Forb

[27] Horsetail*
[6] Dewberry
[5] Bishop's cap
[3] Twinflower
[2] Sweet scented bedstraw
[1] Purple-stemmed aster
[1] American vetch

Grasses

[9] Marsh reedgrass*
[2] Sedge species

SITE CHARACTERISTICS

Moisture regime: subhygric, hygric, mesic
Nutrient regime: rich, medium
Topographic position: level, lower slope, toe
Slope: level (2-5%)
Aspect: level, northerly

SOIL CHARACTERISTICS

Organic thickness: (6-15)
Humus form: mor
Surface texture: SiL, Si, SiC, CL
Effective texture: SiC, C,
Depth to Mottles/Gley: (0-25)
Drainage: imperfect, poor, mod. well, well
Parent material: F, GL, M
Soil subgroup: O.LG, O.G, CU.R, GLCU.R

RANGE PLANT COMMUNITY TYPES

DMA13. River alder/Horsetail

g2 saline (n=11)

CHARACTERISTIC SPECIES

Shrub

[1]	Sandbar willow

Forb

[1]	Sea side arrowgrass
[1]	Sea side buttercup
[1]	Horsetail

Grasses

[12]	Rush species
[20]	Three square rush
[30]	Prairie bulrush
[30]	Nuttall's saltgrass
[25]	Foxtail barley

SITE CHARACTERISTICS

Moisture regime: subhydric, hygric, hydric
Nutrient regime: medium, poor
Topographic position: level, lower slope, toe
Slope: level (2-5%)
Aspect: level, northerly

SOIL CHARACTERISTICS

Organic thickness: >80
Humus form:
Surface texture: fibric, mesic
Effective texture: fibric, mesic, humic
Depth to Mottles/Gley: (0-25)
Drainage: imperfect, poor, very poor
Parent material: O, M
Soil subgroup: TY.M, R.G, TY.F, THU.M, R.HG, ME.OC

RANGE PLANT COMMUNITY TYPES

DMA25. Rush meadow
DMA27. Three square rush
DMA28. Prairie bulrush
DMA29. Nuttall's saltgrass
DMA30. Foxtail barley

j3 grassland poor fen (n=5)

CHARACTERISTIC SPECIES

Shrub

[6]	Bog willow
[1]	Bog birch

Forb

[7]	Buckbean
[5]	Marsh cinquefoil
[3]	Marsh marigold

Grasses

[82]	Two stamened sedge
[1]	Water sedge

SITE CHARACTERISTICS

Moisture regime: subhydric, hygric, hydric
Nutrient regime: medium, poor
Topographic position: level, lower slope, toe
Slope: level (2-5%)
Aspect: level, northerly

SOIL CHARACTERISTICS

Organic thickness: >80
Humus form:
Surface texture: fibric, mesic
Effective texture: fibric, mesic, humic
Depth to Mottles/Gley: (0-25)
Drainage: imperfect, poor, very poor
Parent material: O, M
Soil subgroup: TY.M, R.G, TY.F, THU.M, R.HG, ME.OC

RANGE PLANT COMMUNITY TYPES

DMA24. Two stamened sedge

k2a grazed Willow (n=13)

CHARACTERISTIC SPECIES

Tree

[1] Balsam poplar

Shrub

[1] Rose
[14] Willow*

Forb

[22] Dandelion*
[1] Clover*
[2] Mint
[1] Plantain

Grasses

[16] Kentucky bluegrass*
[12] Marsh reedgrass
[1] Foxtail barley
[1] Sedge species

SITE CHARACTERISTICS

Moisture regime: hydric, subhydric, hygric
Nutrient regime: rich, medium, very rich
Topographic position: level, depression
Slope: level, (2-5%)
Aspect: level

SOIL CHARACTERISTICS

Organic thickness: >80, (6-15)
Humus form: peatymor
Surface texture: fibric, C, mesic, SiL, humic
Effective texture: mesic, C,hC,fibric,SiC, humic
Depth to Mottles/Gley: (0-25)
Drainage: very poor, poor
Parent material: O, GL, L
Soil subgroup: R.G, R.HG, TY.F, O.F

RANGE PLANT COMMUNITY TYPES

DMA11. Willow/Marsh reedgrass-Kentucky bluegrass
DMA14. Willow/Kentucky bluegrass/Dandelion

k3a grazed meadow (n=2)

CHARACTERISTIC SPECIES

Forb

[60]	Dandelion*
[14]	Strawberry*
[12]	Yellow peavine
[11]	Common yarrow
[7]	Horsetail
[3]	Smooth aster
[3]	American vetch

Grasses

[18]	Kentucky bluegrass*
[16]	Rough hairgrass
[5]	Slender wheatgrass
[4]	Fringed brome
[2]	Sedge species

SITE CHARACTERISTICS

Moisture regime: hydric, subhydric, hygric
Nutrient regime: rich, medium, very rich
Topographic position: level, depression
Slope: level, (2-5%)
Aspect: level

SOIL CHARACTERISTICS

Organic thickness: >80, (6-15)
Humus form: peatymor
Surface texture: fibric, C, mesic, SiL, humic
Effective texture: mesic, C,hC,fibric,SiC, humic
Depth to Mottles/Gley: (0-25)
Drainage: very poor, poor
Parent material: O, GL, L
Soil subgroup: R.G, R.HG, TY.F, O.F

RANGE PLANT COMMUNITY TYPES

DMA9. Kentucky bluegrass-Rough hairgrass

DRY MIXEDWOOD SUBREGION
GRASSLAND AND SHRUBLAND COMMUNITY TYPES

Photo 1. The Western porcupine grass-Sedge/Fringed sage community is found throughout the Dry Mixedwood subregion on the south-facing slopes of the Smoky, Wapiti and Peace Rivers. This community provides early spring forage for both wildlife and cattle.

Photo 2. This picture represents the transition from sedge-marsh reedgrass meadows to willow sedge dominated community types. These community types provide a large amount of forage, but the moist conditions limit their use by livestock.

DM - NATIVE GRASS AND SHRUBLAND COMMUNITIES

The Dry Mixedwood subregion represents the transition between the Boreal forest and Parkland subregions. Aspen Parkland-like vegetation can develop where site conditions or drought conditions occur in combination with the driest climatic conditions (Strong 1992). The Grande Prairie area is an example where a number of these conditions occur. It is within this area that a number of native upland grassland community types have been described. On steep, south-facing slopes of the Smoky, Wapiti and Peace Rivers with subxeric moisture regimes and medium nutrient regimes the Western porcupine grass-Sedge/Fringed sage and Northern wheatgrass/Fringed sage community types are common (Figure 1). The Purple oatgrass-Sedge-California oatgrass community type is found on more upland sites with mesic moisture and medium nutrient regimes. Wilkinson and Johnston (1983) felt these grasslands to be the climax community type on Solonetzic soils. Indeed, Adams (1981) found the Western porcupine grass-Sedge dominated community on the Peace River slopes to be associated with Dark Gray Solods and Solonetzic Gray Luvisols. These grasslands provide important forage locally for both wildlife and domestic livestock. The grasslands of the south-facing river slopes are important spring forage sources because of early spring green-up.

On coarse textured, sandy soil, with submesic moisture and poor nutrient regimes which lack tree cover are found the Plains wormwood/Sedge and Saskatoon/Bearberry/Northern ricegrass community types. These community types are usually found in association with Jack pine dominated community types.

Wet freshwater (subhydric/rich) sites are associated with sedge, bulrush, cattail, creeping spike rush, swamp horsetail, common reedgrass, tall manna grass and marsh reedgrass dominated meadows. Sedge, bulrush, cattail, creeping spike rush, common reedgrass, tall manna grass and swamp horsetail species are usually associated with the areas of free standing water and reedgrass species tend to dominate the drier edges. Flat leaved willow and basket willow will invade into these meadows to form the Willow/Sedge and Willow/Marsh reedgrass community types. Rich, subhygric upland sites with better drainage are often dominated by Scouler's willow, Bebb's willow or red osier dogwood. These sites will often become dominated by trees in the absence of disturbance.

Boggy and acidic sites are often dominated by two stamened sedge and bog willow and will undergo succession to black spruce and larch in the absence of disturbance. A number of saline and alkaline sites were described in the Dry Mixedwood subregion. These sites are dominated by rush species, prairie bulrush, Nuttall's saltgrass, foxtail barley or three square rush. These saline communities are more common in the eastern part of the subregion.

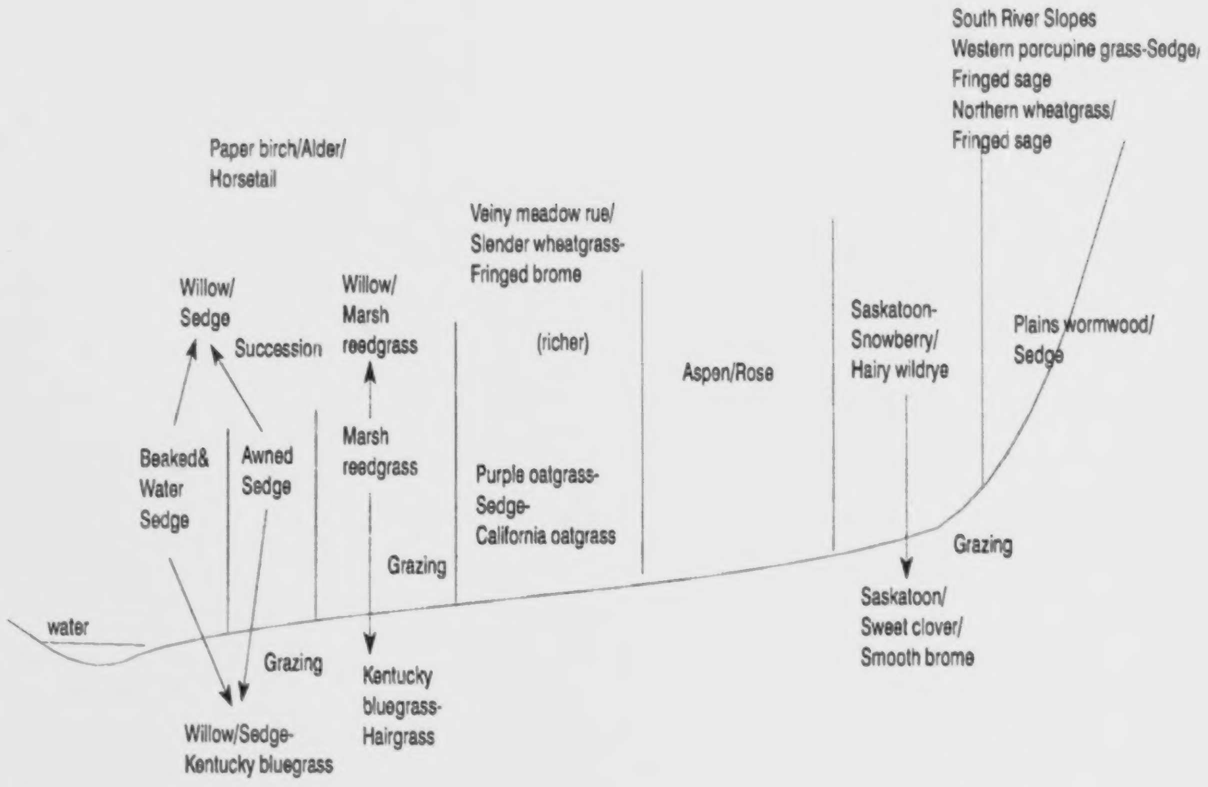

Paper birch/Alder/
Horsetail
Willow/
Sedge
Succession
Beaked&
Water
Sedge
Awned
Sedge
water
Grazing
Willow/Sedge-
Kentucky bluegrass
Willow/
Marsh
reedgrass
Marsh
reedgrass
Grazing
Kentucky
bluegrass-
Hairgrass
Veiny meadow rue/
Slender wheatgrass-
Fringed brome
(richer)
Purple oatgrass-
Sedge-
California oatgrass
Aspen/Rose
Saskatoon-
Snowberry/
Hairy wildrye
Grazing
Saskatoon/
Sweet clover/
Smooth brome
South River Slopes
Western porcupine grass-Sedge/
Fringed sage
Northern wheatgrass/
Fringed sage
Plains wormwood/
Sedge

Figure 4. Overview of native grass and shrubland complex in the Dry Mixedwood subregion.

Table 2. Production (kg/ha) and sustainable stocking rate(ha/AUM) for the ecosite phase, grass and shrubland community types of the Dry Mixedwood subregion

Ecological Site	Community number	Community type	Total productivity (Kg/ha)	Sustainable Stocking Rate 'Ha/AUM' (AUM/ac)
aa xeric/poor	**Ecological site phase aa1 plains wormwood**		**1263**	**0.7**(1.36)
	DMA3	Plains wormwood/Sedge	1263	0.7(1.36)
bb subxeric/medium	**Ecological site phase bb1 Western porcupine grass**		**1055**	**1.0**(0.4)
	DMA5	Western porcupine grass-Sedge/Fringed sage	1055	1.0(0.4)
	Ecological site phase bb2 Northern wheatgrass		**1146**	**1.0**(0.4)
	DMA6	Northern wheatgrass/Fringed sage	1146	1.0(0.4)
d mesic/medium	**Ecological site phase d4 shrubland**		**1089**	**1.1(0.35)**
	DMA7	Saskatoon-Snowberry/Hairy wildrye	677	1.3(0.3)
	DMA8	Saskatoon/Sweet clover/Smooth brome	1500	0.6(1.6)
dd mesic/rich	**Ecological site phase dd1 california oatgrass**		**2504**	**0.4**(1.0)
	DMA4	Purple oatgrass-Sedge-California oatgrass	2508	0.4(1.0)
	DMA4a	Veiny meadow rue/Slender wheatgrass-Fringed brome	2500	0.4(1.0)
e subhygric/rich	**Ecological site phase e4 dogwood shrubland**		**1500***	**1.0(0.35)**
	DMA17	Red osier dogwood/Marsh reedgrass	1500*	Non-use
	DMA18	Silverberry/Smooth brome	1500*	1.0**(0.35)**
f hygric/rich	**Ecological site phase f4 horsetail/Willow**		**1451**	**Non-use**
	DMA12	Willow/Horsetail/Marsh reedgrass	1852	Non-use
	DMA15	Sandbar-Yellow willow	1000*	Non-use
	DMA16	Bebb willow	1500*	1.0(0.35)
	Ecological site phase f5 horsetail		**536**	**Non-use**
	DMA13	River alder/Horsetail	536	Non-use

g subhygric/poor	**Ecological site phase g2 saline**	**1320***	**Non-use**
	DMA25 Rush	*1200**	Non-use
	DMA27 Three square rush	*1200**	Non-use
	DMA28 Prairie rush	*1200**	Non-use
	DMA29 Nuttall's saltgrass	*1500**	0.6(0.65)
	DMA30 Foxtail barley	*1500**	Non-use
j subhydric/medium	**Ecological site phase j2 shrubby poor fen**	**1500***	**Non-use**
	DMA19 Bog willow	*1500**	Non-use
	Ecological site phase j3 grassland poor fen	**1500***	**Non-use**
	DMA24 Two stamened sedge	*1500**	Non-use
k subhydric/rich	**Ecological site phase k2 shrubby rich fen**	**1285**	**0.8(0.5)**
	DMA10 Willow/Sedge	1169	0.8(0.5)
	DMA10a Willow/Marsh reedgrass	1400	0.7(0.6)
	Ecological site phase k2 grazed willow	**2418**	**0.4(1.0)**
	DMA11 Willow/Marsh reedgrass-Kentucky bluegrass	2487	0.4(1.0)
	DMA14 Willow/Kentucky bluegrass/Dandelion	2350	0.4(1.0)
	Ecological site phase k3 graminoid rich fen	**2992**	**0.3**(1.3)
	DMA1 Sedge meadow	3746	0.1(2.3)
	DMA2 Marsh reedgrass meadow	2237	0.4(1.0)
	Ecological site phase k3 grazed meadow	**3064**	**0.3**(1.3)
	DMA9 Kentucky bluegrass/Dandelion	3064	0.3**(1.3)**
l hydric/rich	**Ecological site phase l1 Marsh**	**2250**	**Non-use**
	DMA1a Bulrush-Cattail	4300	Non-use
	DMA20 Swamp horsetail	*2000**	Non-use
	DMA21 Tall manna grass	*2000**	Non-use
	DMA22 Common reedgrass	*2000**	Non-use
	DMA23 Reed canary grass	*2000**	0.5(0.8)
	DMA26 Creeping spike rush	*1200**	Non-use

*Estimated forage production

Dry Mixedwood Grass and Shrublands

1. Shrub-dominated, willow, bog birch lowland sites or silverberry, river alder and red osier dogwood dominated upland sites........2

Grass-dominated, or if shrub-dominated, upland species like hazelnut, saskatoon, or rose........7

SHRUB DOMINATED

2. Red osier dogwood or river alder dominated sites........2a

Willow or silverberry dominated community types, sedge, marsh reedgrass, horsetail dominate understory........3

2a. Red osier dogwood dominated community........**DMA17 Red osier dogwood/Marsh reedgrass**

River alder dominated community........**DMA13 River alder/Horsetail**

3. Ungrazed communities dominated by horsetail, marsh reedgrass or sedge species, or moderately grazed community which has some Kentucky bluegrass........4

Grazed community types dominated by Kentucky bluegrass and dandelion in the understory (little cover of native species)...**Willow/Kentucky Bluegrass/Dandelion (DMA14)**

4. Ungrazed site, horsetail dominates understory........**Willow/Horsetail/Marsh Reedgrass (DMA12)**

Ungrazed or moderately grazed site, sedge or marsh reedgrass dominates understory........5

.5. Wetland sedge species dominate understory........**Willow/Sedge (DMA10)**

Upland sites dominated by willow or silverberry or boggy sites and riparian areas dominated by yellow willow, sandbar willow or bog willow........5a

5a Ungrazed or moderately grazed sites dominated by Marsh reedgrass in understory........6

Willow or silverberry dominated uplands or willow dominated riparian areas or boggy areas........6a

6. Ungrazed marsh reedgrass dominates understory........**Willow/Marsh Reedgrass (DMA10a)**

Moderately to heavily grazed sites with Kentucky bluegrass in understory ....**Willow/Marsh Reedgrass-Kentucky Bluegrass (DMA 11)**

6a Riparian areas dominated by sandbar and yellow willow........**DMA15 Sandbar -Yellow willow**

Upland sites dominated by Bebb willow, silverberry or boggy sites dominated by bog willow........6b

6b Boggy sites dominated by Bog willow........**DMA19 Bog willow**

Upland sites dominated by Bebb willow or silverberry........6c

6c Bebb willow dominated........**DMA16 Bebb willow/Marsh reedgrass**

Silverberry dominated........**DMA18 Silverberry/Smooth brome**

GRASS DOMINATED

7. Lowland sites dominated by sedge, marsh reed grass, Kentucky bluegrass, bulrush, swamp horsetail, creeping spike rush common reedgrass, reed canary grass or cattail (includes saline sites)........8

Upland sites or south facing slopes dominated by northern ricegrass, saskatoon, California oatgrass, sage, veiny meadow rue, slender wheatgrass or fringed brome........11

8. Ungrazed very wet sites dominated by native grass species........8a

Grazed sites dominated by Kentucky bluegrass........**Kentucky Bluegrass/Dandelion (DMA9)**

8a Saline sites dominated by three square rush, foxtail barley, Nuttall's saltgrass or baltic rush spp.....17

Fresh water or boggy sites dominated by cattails, bulrushes, sedge and Marsh reedgrass........9

9. Very wet sites with standing water, cattails, bulrush, swamp horsetail, tall manna grass, common reedgrass, reed canary grass, or creeping spike rush present........9a

Wet sites, dominated by sedge and marsh, narrow or northern reedgrass........10

9a. Bulrush or cattail dominated sites........**DMA1 Bulrush-Cattail**

Drier sites, edge communities near free standing water........9b

9b Common reedgrass or reed canary grass dominated........9c

Tall manna grass, Creeping spike rush or swamp horsetail dominated........9d

9c Common reedgrass dominated........**DMA23 Common reedgrass**

Reed canary grass dominated........**DMA24 Reed canary grass**

9d Swamp horsetail dominated........**DMA20 Swamp horsetail**

Tall manna grass or creeping spike rush dominated........9e

9e Tall manna grass dominated........**DMA22 Tall manna grass**

Creeping spike rush dominated........**DMA27 Creeping spike rush**

10. Wet sites dominated by wetland sedge species........10a

Drier sites dominated by marsh reedgrass........**Marsh Reedgrass Meadow (DMA2)**

10a Boggy sites dominated by two stamened sedge........**DMA25 Two stamened sedge**

Fresh water sites dominated by water, beaked or awned sedge.....**DMA1 Sedge meadows**

11. Open meadow and grasslands or upland shrublands situated amongst jackpine and aspen stands..........12
South facing river slopes..........16
12. Mesic sites with medium to rich nutrient soils, dominated by purple oatgrass, sedge, slender wheatgrass, veiny meadow rue, fringed brome and California oatgrass..........13
Upland sandy sites, interspersed with jack pine or aspen..........14
13. Mesic sites with medium nutrient regimes dominated by purple oatgrass, sedge, and California oatgrass species.......... **Purple Oatgrass-Sedge-California Oatgrass (DMA4)**
Richer sites, veiny meadow rue, slender wheatgrass, and fringed brome dominate the canopy..........**Veiny Meadow Rue/Slender Wheatgrass-Fringed Brome (DMA4a)**
14. Very dry south facing hilltops dominated by Plains wormwood and sedge species..........**Plains Wormwood/Sedge (DMA3)**
Moister sites dominated by hazelnut, saskatoon, bearberry, sweet clover, smooth brome, or northern ricegrass..........15
15. Native sites dominated by saskatoon and snowberry..........**Saskatoon-Snowberry/Hairy Wildrye (DMA7)**
Grazed and disturbed sites dominated by saskatoon, sweet clover and smooth brome..........**Saskatoon/Sweet Clover/Smooth Brome (DMA8)**
16. Moderate slopes dominated by western porcupine grass and sage..........**Western Porcupine Grass-Sedge/Fringed Sage (DMA5)**
Very steep slopes or grazing modified communities dominated by northern wheatgrass and sage..........**Northern Wheatgrass/Fringed Sage (DMA6)**
17. Bulrush dominated sites..........18
Nuttall's saltgrass, foxtail barley, or rush dominated..........19
18. Prairie bulrush dominated..........**DMA29 Prairie bulrush**
Three square rush dominated..........**DMA28 Three square rush**
19. Nuttall's saltgrass dominated meadow..........**DMA30 Nuttall's saltgrass**
Foxtail barley or Baltic rush dominated..........20
20. Disturbed site dominated by foxtail barley..........**DMA31 Foxtail barley**
Baltic rush dominated meadow..........**DMA26 Rush**

DMA1. Sedge meadows

(Carex aquatilis, C. rostrata, C. atherodes)

n=41 This wetland community type is found near fresh water and can be dominated by water sedge, beaked sedge or awned sedge. The sedge meadow is a poorly drained community. As one moves to the drier edges marsh reedgrass becomes predominant. Willows will invade into both the sedge and marsh reedgrass dominated meadows. The sedge meadow community is very productive, but the high water table, particulary in the spring when the sedge species are most palatable, restricts livestock movement. One study done in the Yukon found that crude protein on these meadows declined from a high of 10% in May to less than 5% in September (Bailey et al. 1992).

Beaked sedge found in abundance in this community is usually associated with nitrogen rich conditions and moving water (Brierly et al. 1985). Water sedge is often found in abundance in this community type and is associated with calcium rich stagnant water (MacKinnon et al. 1992).

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	MEAN	RANGE	CONST.
WILLOW SPP.			
(Salix spp.)	2	0-30	44
FORBS			
MARSH WILLOWHERB			
(Epilobium palustris)	1	0-3	2
DOCK			
(Rumex acetosa)	1	0-2	12
SKULL CAP			
(Scutellaria galericulata)	1	0-1	44
MINT			
(*Mentha arvensis*)	1	0-4	22
GRASSES			
BEAKED SEDGE			
(*Carex rostrata)*	23	0-85	56
AWNED SEDGE			
(*Carex atherodes*)	35	0-97	65
WATER SEDGE			
(*Carex aquatilis*)	21	0-90	51
MARSH REEDGRASS			
(*Calamagrostis canadensis*)	3	0-11	17

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN
RICH
ELEVATION:
586(579-600) M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	3673(1054-5028)
FORB	73(0-80)
SHRUB	40(0-120)
TOTAL	3746(1254-5028)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.1 Ha/AUM (Autumn only)(2.3 AUM/AC)

DMA1a. Bulrush-Cattail

(Scirpus acutus-Typha latifolia)

n=18 This wetland community type is associated with standing water. This community is an emergent community found in standing water of ponds and sloughs. As one moves away from the water to the drier edges the sedge meadow communities are found. On the drier edges the marsh reedgrass community is found and willow are associated in the transition from the slough margin and the forest.

This community type would be rated as non-use for domestic livestock because of the extremely wet conditions.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
ARUM-LEAVED ARROW HEAD			
(Sagittaria cuneata)	1	0-3	17
NARROW LEAVED BURREED			
(Sparganium eurycarpium)	9	0-80	11
BULB BEARING WATER HEMLOCK			
(*Cicuta bulbifera*)	1	0-3	11
GRASSES			
COMMON GREAT BULRUSH			
(*Scripus validus)*	6	0-60	11
GREAT BULRUSH			
(*Scirpus acutus*)	29	0-90	44
CATTAIL			
(*Typha latifolia*)	27	0-97	50
CREEPING SPIKE RUSH			
(*Eleocharis palustris*)	3	0-4	22
SPANGLETOP			
(*Scholochloa festucacae*)	5	0-97	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN
RICH
ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
VERY POORLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	4300
TOTAL	4300

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA2. Marsh reedgrass meadow

(Calamagrostis canadensis, C. inexpansa, C. stricta)

n=12 This community is found on the edges of sedge meadows and moist draws where the water table is lower and can be dominated by either species of reedgrass. The lower water table makes this community accessible for most of the grazing season. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and their will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. *(Salix spp.)*	1	0-10	50
FORBS			
MINT *(Mentha arvense)*	2	0-20	40
STINGING NETTLE *(Urtica dioica)*	3	0-10	33
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	42	0-97	67
BALTIC RUSH *(Juncus balticus)*	1	0-10	25
NORTHERN REEDGRASS *(Calamagrostis inexpansa)*	10	0-90	17
WATER SEDGE *(Carex aquatilis)*	1	0-3	33
NARROW REEDGRASS *(Calamagrostis stricta)*	15	0-70	25

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-HYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
603(600-606)M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1427(1254-1600)
FORB	812(450-1174)
TOTAL	2237(2050-2424)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

DMA3. Plains wormwood/Sedge

(Artemisia campestris/Carex spp.)

n=2 This community type is found on coarse textured, sandy soils. It is generally found on hilltops and south-facing slopes in openings among Jack pine on the uplands and black spruce in the lowlands. This community type was also described on similar site conditions in the Central Mixedwood subregion. This community would be considered either secondary or non-use range for domestic livestock because of the low forage production and fragile nature of the community.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
SCOURING RUSH *(Equisetum hyemale)*	8	0-16	50
PLAINS WORMWOOD *(Artemisia campestris)*	12	8-15	100
LOW GOLDENROD *(Solidago missouriensis)*	1	0-2	50
AMERICAN VETCH *(Vicia americana)*	1	0-2	50
YELLOW BEARDSTONGUE (*Penstemon confertus*)	1	0-1	50
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	0-9	50
CREEPING RED FESCUE *(Festuca rubra)*	2	0-4	50
SEDGE (*Carex spp*)	18	1-34	100
SHEEP FESCUE (*Festuca saximontana*)	2	1-3	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
XERIC-SUBXERIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC
ELEVATION:
467(325-606) M
SOIL DRAINAGE:
RAPIDLY TO WELL
SLOPE(RANGE):
16(10-22)
ASPECT:
SOUTH TO WESTERLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	652
FORB	525
SHRUB	86
TOTAL	1263

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.7 HA/AUM(1.4 AUM/AC)

DMA4. Purple oatgrass-Sedge-California oatgrass

(Schizachne purpurascens-Carex spp.-Danthonia californica)

n=4 This community appears to be characteristic of dry grassy meadows on dark colored Solonetzic soils and gentle to level areas throughout the Dry Mixedwood subregion. Wilkinson and Johnson (1982), found there was a close correlation between large tracts of prairie vegetation and the distribution of solonetzic soils in the Peace River district of Alberta. They specifically described Western porcupine grass-Sedge/Fringed sage community on steep south -facing slopes and a Sedge-California oatgrass-Western porcupine grass on more gentle slopes. They felt the solonetzic soils supported grasslands and not forests because of their unfavourable ratios of Ca and Na, hard, columnar B-horizon, and relatively impermeable clay pan close to the surface. This community type appears to more similar to their Sedge-California oatgrass-Western porcupine grass community type. It is likely the heavy grazing pressure of the described sites favours the growth of purple oatgrass over Western porcupine grass on these sites.

This community type would be rated as primary range. Indeed many of the sites described were old homestead sites.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	3	0-10	20
SNOWBERRY			
(Symphoricarpos occidentalis)	12	0-36	75
SASKATOON			
(Amelanchier alnifolia)	1	0-3	50
FORBS			
STRAWBERRY			
(Fragaria virginiana)	14	1-29	100
MEADOW RUE			
(Thalictrum venulosum)	4	1-8	
100DANDELION			
(Taraxacum officinale)	8	0-20	100
YARROW			
(Achllea millefolium)	6	0-12	75
AMERICAN VETCH			
(Vicia americana)	5	0-9	75
GRASSES			
PURPLE OATGRASS			
(Schizachne purpurascens)	25	12-34	100
SLENDER WHEATGRASS			
(Agropyron trachycaulum)	12	6-18	100
KENTUCKY BLUEGRASS			
(Poa pratensis)	12	1-40	100
PRAIRIE SEDGE			
(Carex prairea)	9	0-15	75
JUNEGRASS			
(Koeleria macrantha)	4	0-6	75
CALIFORNIA OATGRASS			
(Danthonia californica)	9	0-28	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC
NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
576-606(584) M
SOIL DRAINAGE (MEAN):
WELL
SLOPE % (RANGE):
2(0-5)
ASPECT:
SOUTH TO WEST
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION (KG/HA)

GRASS	1463 (626-2578)
FORB	818(500-1192)
SHRUB	227(0-606)
TOTAL	2508(1600-3316)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

DMA4a. Veiny meadow rue/Slender wheatgrass-Fringed brome

(Thalictrum venulosum/Agropyron trachycaulum-Bromus ciliatus)

n=2 This community appears to be characteristic of dry grassy meadows on dark colored Chernozemic soils and gentle to level areas throughout the Dry Mixedwood subregion. This community type is likely associated with the large tracts of prairie vegetation described by Wilkinson and Johnson (1982) in the Peace River district of Alberta. They specifically described Western porcupine grass-Sedge/Fringed sage community on steep south - facing slopes and a Sedge-California oatgrass-Western porcupine grass on more gentle slopes. They felt these grasslands were associated with the distribution of solonetzic soils in the Peace River area. This community type appears to be richer than the Sedge-California oatgrass-Western porcupine grass community described by Wilkinson and Johnson. The soils on this community are described as Chernozemic and the parent material is fluvial in origin.

These sites are very productive and should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	1	0-1	50
FORBS			
STRAWBERRY *(Fragaria virginiana)*	1	0-1	50
MEADOW RUE *(Thalictrum venulosum)*	23	15-30	100
FIREWEED *(Epilobium angustifolum)*	2	1-2	100
YARROW *(Achllea millefolium)*	1	0-2	50
TALL LUNGWORT *(Mertensia paniculata)*	9	2-15	100
GRASSES			
FRINGED BROME *(Bromus cilatus)*	15	10-20	100
SLENDER WHEATGRASS *(Agropyron trachycaulum)*	18	15-20	100
WHITE SCALED SEDGE *(Carex xerantica)*	10	9-10	100
MARSH REEDGRASS *(Calamagrostis canadensis)*	1	0-2	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC
NUTRIENT REGIME (MEAN):
MEDIUM-RICH
ELEVATION:
472-587(530) M
SOIL DRAINAGE (MEAN):
MODERATELY WELL
SLOPE:
LEVEL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 2500 KG/HA *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

DMA5. Western porcupine grass-Sedge/Fringed sage

(Stipa curtiseta-Carex spp./Artemisia frigida)

n=7 This community type is found on steep, south-facing slopes along the banks of the Peace, Smoky and Wapiti rivers throughout the Dry Mixedwood subregion. Wilkinson and Johnson (1982), found there was a close correlation between large tracts of prairie vegetation and the distribution of solonetzic soils in the Peace River district of Alberta. They specifically described Western porcupine grass-Sedge/Fringed sage community on steep south -facing slopes and a Sedge-California oatgrass-Western porcupine grass on more gentle slopes. They felt the solonetzic soils supported grasslands and not forests because of their unfavourable ratios of Ca and Na, hard, columnar B-horizon, and relatively impermeable clay pan close to the surface. Adams (1981), found this community type as being a major source of spring forage for livestock in the Peace River area. He found that with increased grazing pressure sedge, junegrass, northern and western wheatgrass would increase as western porcupine grass declines. Often this community type is on steep enough slopes to be considered non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
FRINGED SAGE (*Artemisia frigida*)	8	0-30	86
SASKATOON (*Amelanchier alnifolia*)	1	0-2	71
SNOWBERRY (*Symphoricarpos occidentalis*)	2	0-8	57
FORBS			
LITTLE LEAVED EVERLASTING *(Antennaria parviflora)*	1	0-3	43
BASTARD'S TOADFLAX (*Commandra umbellata*)	1	0-2	71
PRAIRIE CROCUS (*Anemone patens*)	2	0-12	43
PRICKLY PEAR CACTUS (*Opuntia fragilis*)	1	0-2	29
GRASSES			
WESTERN PORCUPINE GRASS (*Stipa curtiseta*)	15	5-46	100
BLUNT SEDGE (*Carex obtusata*)	15	0-33	75
GREEN NEEDLEGRASS (*Stipa viridula)*	5	0-17	43
JUNEGRASS (*Koeleria macrantha*)	6	0-12	86
WESTERN WHEATGRASS (*Agropyron smithii*)	1	0-5	43
KENTUCKY BLUEGRASS (*Poa pratensis*)	1	0-8	14
NORTHERN WHEATGRASS (*Agropyron dasystachyum*)	2	0-6	29

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBXERIC-SUBMESIC
NUTRIENT REGIME (MEAN):
POOR-MEDIUM
ELEVATION:
442-606(503) M
SOIL DRAINAGE (MEAN):
VERY RAPIDLY
SLOPE:
35-82(59)%
ASPECT:
SOUTH AND WEST

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	989(700-945)
FORB	254(0-531)
SHRUB	5(0-20)
TOTAL	1055(752-1476)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DMA6. Northern wheatgrass-Junegrass/Fringed sage

(Agropyron dasystachyum-Koeleria macrantha/Artemisia frigida)

n=13 This community type is found on steep, south-facing slopes along the banks of the Peace, Smoky and Wapiti rivers throughout the Dry Mixedwood subregion. Adams (1981), felt this community type would form when the Western porcupine grass community was heavily to moderately grazed, but a number of plots were described in an area that had little grazing pressure. This community was located on a much steeper slope (76% vs 35%) than the previously described Western porcupine grass community type. It is likely that the drier site conditions and shallower and poorer nutrient soils favour the growth of northern wheatgrass over Western porcupine grass. This community type is located on a steep enough slope to be considered non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
FRINGED SAGE (*Artemisia frigida*)	6	0-20	80
SASKATOON (*Amelanchier alnifolia*)	6	0-15	95
ROSE (*Rosa acicularis*)	3	0-15	62
SNOWBERRY (*Symphoricarpos occidentalis*)	3	0-10	69
FORBS			
WILD BLUE FLAX *(Linum lewesii)*	1	0-4	23
LINDLEY'S ASTER (*Aster ciliolatus*)	1	0-3	46
SHOWY LOCOWEED (*Oxytropis splendens*)	1	0-2	39
DANDELION (*Taraxacum offincinale*)	1	0-2	62
GRASSES			
NORTHERN WHEAT GRASS *(Agropyron dasystachyum)*	10	0-17	75
SEDGE SPP. (*Carex spp.*)	3	0-7	63
RICHARDSON NEEDLEGRASS (*Stipa richardsonii)*	1	0-4	15
JUNEGRASS (*Koeleria macrantha*)	5	0-20	77
SLENDER WHEATGRASS (*Agropyron trachycaulum)*	3	0-30	46

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
XERIC-SUBXERIC
NUTRIENT REGIME (MEAN):
POOR
ELEVATION:
345-606 M
SOIL DRAINAGE (MEAN):
VERY RAPIDLY
SLOPE:
68(10-90%)
ASPECT:
SOUTH AND WEST

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	600(500-798
FORB	183(50-400)
SHRUB	309(220-450)
TOTAL	1146(1000-1350)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DMA7. Saskatoon-Snowberry/Hairy wildrye

(Amelanchier alnifolia -Symphoricarpos occidentalis/Elymus innovatus)

n=9 This community represents small shrubby openings within aspen forests on southwest facing slopes and level areas. These sites have well developed Luvisolic soils with colluvial, glacialfluvial and glacial lacustrine parent materials. It is likely these shrubby openings are drier than the surrounding forest, which favours the growth of shrubs over trees. Forage productivity on these sites is only moderate averaging only 677 kg/ha. These sites are also heavily utilized by wildlife. As a result caution should be used when managing these sites for domestic livestock grazing in order to prevent overutilization.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
BLUEBERRY *(Vaccinium myrtilloides)*	1	0-5	22
CHOKECHERRY (*Prunus virginiana*)	12	0-45	78
SNOWBERRY (*Symphoricarpos occidentalis*)	10	1-30	100
SASKATOON (*Amelanchier alnifolia*)	15	6-65	100
PRICKLY ROSE (*Rosa acicularis)*	13	5-27	100
FORBS			
BEARBERRY *(Arctostaphylos uva-ursi)*	5	0-36	22
STRAWBERRY *(Fragaria virginiana*)	1	0-7	67
YELLOW PEAVINE *(Lathyrus ochroleucus)*	1	0-2	78
LINDLEY'S ASTER *(Aster ciliolatus*)	2	0-5	67
GRASSES			
NORTHERN RICEGRASS (*Oryzopsis pungens*)	2	0-12	22
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	3	0-5	56
BLUNT SEDGE (*Carex obtusata*)	1	0-9	22
HAIRY WILDRYE (*Elymus innovatus*)	2	0-10	78
KENTUCKY BLUEGRASS (*Poa pratensis*)	1	0-7	11

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBMESIC
NUTRIENT REGIME (MEAN):
POOR
ELEVATION:
343-606(460) M
SOIL DRAINAGE (MEAN):
VERY RAPIDLY TO WELL
SLOPE (RANGE):
17(0-72)
ASPECT:
VARIABLE
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	344(124-564)
FORB	189(82-296)
SHRUB	144(104-184)
TOTAL	677(524-830)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.3 Ha/AUM (0.3 AUM/AC)

DMA8. Saskatoon/Sweet clover/Smooth brome

(Amelanchier alnifolia/Meliolatus officinalis/Bromus inermis)

n=2 This community type appears to represent the Saskatoon-Snowberry/Hairy wildrye community type which has undergone disturbance by livestock. Sweet clover and smooth brome are both weedy species and occur essentially where roads and settlement occurs. Sweet clover is well adapted to growing on roadsides and in waste places. Unfortunately, forage production was not done for this community type, but sweet clover and brome can be very productive if grazed before they become overmature.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	5	4-5	100
SHRUBS			
SNOWBERRY *(Symphoricarpos occidentalis)*	20	14-25	100
PRICKLY ROSE *(Rosa acicularis)*	37	11-62	100
SASKATOON (*Amelanchier alnifolia*)	7	1-13	100
FORBS			
STRAWBERRY *(Fragaria virginiana)*	1	1-2	100
CREAM COLORED VETCHLING(PEAVINE) *(Lathyrus ochroleucus)*	2	1-3	100
NORTHERN BEDSTRAW *(Galium boreale)*	5	1-8	100
SWEET CLOVER (*Meliolatus officinalis*)	8	0-16	50
GRASSES			
SMOOTH BROME *(Bromus inermis)*	7	0-13	50
ROSS'S SEDGE *(Carex rossii)*	6	4-7	100
TIMOTHY (*Phleum pratense*)	5	0-6	50
KENTUCKY BLUEGRASS (*Poa pratensis*)	1	0-1	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC-MESIC

NUTRIENT REGIME (MEAN):
POOR-MEDIUM

ELEVATION:
455 M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

SLOPE (RANGE):
4(3-5)

ASPECT:
SOUTHERLY

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.6 HA/AUM (0.65 AUM/AC)

DMA9. Kentucky bluegrass/Dandelion

(*Poa pratensis/Taraxacum officinale*)

n=2 This community type represents a Marsh reedgrass meadow that has undergone heavy prolonged grazing pressure and is now dominated by Kentucky bluegrass, rough hairgrass and dandelion. This community is a fairly productive community type and the species are generally palatable to livestock when grazed in the vegetative state, but the extremely heavy grazing pressure which is needed to displace the native grass species indicates that there are livestock distribution problems that should be addressed.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
FORBS			
AMERICAN VETCH (*Vicia americana*)	3	3-4	100
DANDELION (*Taraxacum officinale*)	30	0-60	50
YELLOW PEAVINE (*Lathyrus ochroleucus*)	6	0-12	50
WILD STRAWBERRY (*Fragaria virginiana*)	7	0-14	50
YARROW (*Achillea millefolium*)	6	0-11	50
HORSETAIL (*Equisetum arvense*)	4	0-7	50
GRASSES			
KENTUCKY BLUEGRASS (*Poa pratensis*)	58	18-97	100
ROUGH HAIRGRASS (*Agrostis scabra*)	8	0-15	50
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	3	0-5	50
FRINGED BROME (*Bromus ciliatus*)	2	0-4	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
697 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1382
FORB	1682
TOTAL	3064

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.3 HA /AUM (1.3 AUM/AC)

DMA10. Willow/Sedge

(Salix spp./Carex spp.)

n=27 This community type is found along the edges of sedge meadows and in moist depressions. Generally flat leaved willow and basket willow become established at the edges of the sedge meadows due to the shorter duration of standing water. Increased flooding and prolonged water logging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
BEBB WILLOW			
(Salix bebbiana)	5	0-65	47
FLAT LEAVED WILLOW			
(*Salix planifolia*)	11	0-90	52
BASKET WILLOW			
(*Salix petiolaris*)	7	0-60	37
FORBS			
MINT			
(Mentha arvensis)	1	0-5	44
SKULLCAP			
(Scutellaria galericulata)	1	0-10	52
STRAWBERRY			
(*Fragaria virginiana)*	2	0-18	29
DANDELION			
(*Taraxacum officinale)*	3	0-22	30
ARROWED LEAVED COLTSFOOT			
(*Petasites sagittatus*)	2	0-30	41
GRASSES			
AWNED SEDGE			
(Carex atherodes)	12	0-70	59
MARSH REEDGRASS			
(Calamagrostis canadensis)	2	0-11	48
BEAKED SEDGE			
(Carex rostrata)	11	1-42	70
WATER SEDGE			
(*Carex aquatilis*)	9	0-80	63

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
576-606(588) M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	673(344-1002)
FORB	470(52-888)
SHRUB	11(0-22)
TOTAL	1169(448-1890)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.8 HA /AUM (0.5 AUM/AC)

DMA10a. Willow/Marsh reedgrass

(*Salix spp./Calamagrostis canadensis)*

n=18 This community type is found along the edges of sedge and marsh reedgrass meadows and in moist depressions. Predominantly flat leaved willow becomes established at the edges of these meadows due to the shorter duration of standing water. Increased flooding and prolonged water logging may result in the disappearance of willow and a transition to a marsh reedgrass and water sedge meadow. These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
BEBB WILLOW *(Salix bebbiana)*	3	0-20	44
FLAT LEAVED WILLOW (*Salix planifolia*)	26	0-70	75
BASKET WILLOW (*Salix petiolaris*)	3	0-20	38
FORBS			
SKULLCAP *(Scutellaria galericulata)*	1	0-10	38
MARSH HEMP NETTLE *(Stachys palustris)*	2	0-10	38
STRAWBERRY (*Fragaria virginiana)*	7	0-80	31
STINGING NETTLE (*Urtica dioica)*	1	0-5	56
HORSETAIL (*Equisetum arvense*)	1	0-10	43
GRASSES			
AWNED SEDGE *(Carex atherodes)*	2	0-20	44
MARSH REEDGRASS *(Calamagrostis canadensis)*	22	0-70	94
BEAKED SEDGE *(Carex rostrata)*	2	0-10	38
FOWL BLUEGRASS (*Poa palustris*)	2	0-10	38

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1325(900-1750)
FORB	75(50-200)
TOTAL	1400(950-1850)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.7 HA/AUM (0.55 AUM/AC)

DMA11. Willow/Marsh reedgrass-Kentucky bluegrass

(Salix spp./Calamagrostis canadensis-Poa pratensis)

n=6 This community type is very similar to the Willow/ Marsh reedgrass community type, but has been heavily grazed favouring the growth of Kentucky bluegrass and dandelion. Continued heavy grazing pressure will eventually lead to a understory community that is similar to the Willow/ Kentucky bluegrass/dandelion dominated community type.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. (*Salix spp.*)	17	10-35	100
SNOWBERRY (*Symphoricarpos occidentalis*)	1	0-1	17
FORBS			
MINT (*Mentha arvensis)*	2	0-6	83
DANDELION (*Taraxacum offincinale)*	15	1-41	100
BUSHY CINQUEFOIL (*Potentilla paradoxa)*	1	0-2	67
GRASSES			
MARSH REEDGRASS (*Calamagrostis canadensis)*	15	3-42	100
KENTUCKY BLUEGRASS (*Poa pratensis)*	17	4-32	100
BALTIC RUSH (*Juncus balticus)*	2	0-9	17
FOXTAIL BARLEY (*Hordeum jubatum*)	1	0-3	83

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
600-606 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	2487(1800-1922)
FORB	1129(176-2450)
SHRUB	5(0-28)
TOTAL	2487(1800-4250)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA /AUM (1.0 AUM/AC)

DMA12. Willow/Horsetail/Marsh reedgrass

(Salix spp./Equisetum arvensis/Calamagrostis canadensis)

n=12 This community type appears to be transitional between the horsetail (hygric/rich) and shrubby rich fen (subhydric/rich) ecosites described by Beckingham and Archibald (1996). It has plant species characteristic of both ecosites. This community type is also similar to the Willow-Alder/Fern community described on moist, nutrient rich seepage areas in the Lower Foothills subregion (Lane et al. 2000). This community type is very productive, but the high shrub cover and slope conditions make it difficult to graze. Horsetail the principal forage species is generally unpalatable to domestic livestock and can be poisonous to livestock in large amounts (Lodge et al. 1968). Consequently, this community type should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
SCOULER'S WILLOW *(Salix scouleriana)*	53	0-90	92
WILLOW SPP. *(Salix spp.)*	5	0-65	8
BRACTED HONEYSUCKLE *(Lonicera involcrata)*	2	0-10	67
RED OSIER DOGWOOD *(Cornus stolonifera)*	5	0-30	83
FORBS			
STINGING NETTLE *(Urtica dioica)*	9	0-60	58
COMMON HORSETAIL *(Equisetum arvensis)*	15	1-60	100
LARGE LEAVED YELLOW AVENS *(Geum macrophyllum)*	1	0-3	58
DEWBERRY *(Rubus pubescens)*	2	0-10	67
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	22	0-97	75

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
667 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	580
FORB	1272
TOTAL	1852

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA13. River alder/Horsetail

(Alnus tenuifolia/Equisetum arvensis)

n=6 This community represents lowland sites surrounding open water or nutrient rich river flood plains This community is part of the red osier dogwood ecological site. Succession in the absence of disturbance will likely be to balsam poplar and eventually white spruce. The high shrub cover limits access to livestock, consequently, this community type would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
PAPER BIRCH (*Betula papyrifera*)	4	0-25	33
LARCH (*Larix laricina*)	1	0-5	17
SHRUBS			
WILLOW SPP. (*Salix spp.*)	2	1-3	100
RIVER ALDER (*Alnus tenuifolia*)	43	10-90	100
BRACTED HONEYSUCKLE (*Lonicera involcrata*)	2	0-7	33
RED OSIER DOGWOOD (*Cornus stolonifera*)	1	0-3	50
FORBS			
DEWBERRY (*Rubus pubescens*)	8	0-30	67
BISHOP'S CAP (*Mitella nuda*)	2	0-5	50
HORSETAIL (*Equisetum arvensis*)	6	0-27	67
HEMP NETTLE (*Galeopsis tetrahit*)	9	0-50	33
GRASSES			
SEDGE (*Carex spp.*)	2	0-3	50
MARSH REEDGRASS (*Calamagrostis canadensis*)	5	0-10	83
NODDING WOOD REED (*Cinna latifolia*)	3	0-20	33
SMOOTH BROME (*Bromus inermis*)	8	0-50	17

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	102
FORB	330
SHRUB	104
TOTAL	536

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA14. Willow/Kentucky bluegrass/Dandelion

(Salix spp./Poa pratensis/Taraxacum officinale)

n=7 This community type is very similar to the Willow/ Marsh reedgrass community type, but has been heavily grazed favouring the growth of Kentucky bluegrass and dandelion. Continued heavy grazing pressure eventually leads to a understory community that is dominated by Kentucky bluegrass and dandelion

PLANT COMPOSITIONCANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. (*Salix spp.*)	8	0-20	85
SCOULER'S WILLOW (*Salix scouleriana*)	9	0-50	29
FLAT LEAVED WILLOW (*Salix planifolia*)	11	0-40	29
FORBS			
MINT *(Mentha arvensis)*	2	0-10	57
DANDELION (*Taraxacum officinale*)	32	0-80	71
PLANTAIN *(Plantago major)*	1	0-5	21
STRAWBERRY (*Fragaria virginiana*)	2	0-10	57
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	5	0-10	86
KENTUCKY BLUEGRASS *(Poa pratensis)*	10	0-40	43
FOWL BLUEGRASS *(Poa palustris)*	4	0-10	71
SMOOTH BROME (*Bromus inermis*)	4	0-30	14

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
600-606 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1100(700-1500)
FORB	1250(750-1750
TOTAL	2350(2250-2450)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

DMA15. Sandbar willow-Yellow willow

(Salix exigua-Salix lutea)

n=14 This community type occurs on moist alluvial deposits which are adjacent to streams and rivers. This community can persist for some time if the site is subject to frequent flooding. However in the absence of disturbance it will eventually undergo succession to a spruce dominated community type. Thompson and Hansen (2002) described this community in the grassland natural region of Southern Alberta. They found that this community type disappeared as one moved north into the Parkland and it was replaced by basket willow and flat leaved willow dominated community types. Typically there is little understory vegetation found in this community type and it should be rated as non-use for livestock.

PLANT COMPOSITION

	CANOPY COVER (%)		
	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR (*Populus balsamifera*)	1	0-3	42
SHRUBS			
SANDBAR WILLOW (*Salix exigua*)	32	0-60	86
YELLOW WILLOW (*Salix lutea*)	11	0-40	86
SHINING WILLOW (*Salix lucida*)	2	0-30	29
FORBS			
HORSETAIL (*Equisetum arvense*)	12	0-90	64
SILVERWEED (*Potentilla anserina*)	2	0-10	43
PLANTAIN (*Plantago major*)	2	0-20	29
GRAMINOIDS			
SMALL FRUITED BULRUSH (*Scirpus microcarpus*)	2	0-10	43
KENTUCKY BLUEGRASS (*Poa pratensis*)	2	0-3	50
SMOOTH BROME (*Bromus inermis*)	9	0-90	57

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: HYGRIC

NUTRIENT REGIME: RICH

ELEVATION: 600 M

SOIL DRAINAGE: IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL	1000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA16: Bebb willow/Marsh reedgrass

(Salix bebbiana/Calamagrostis canadensis)

n=13 This community type is found along the drier edges of marsh reedgrass meadows and in moist depressions and represents the transition between the flat leaved willow and basket willow dominated shrublands and the upland forest. Bebb willow is an upland species that prefers well drained sites. This species of willow is often found in the understory of aspen and balsam poplar dominated community types. Increased flooding and prolonged water logging may result in the disappearance of Bebb willow and favour the growth of flat leaved willow. In contrast the continued drying of the site will favour the growth of balsam poplar. These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION	CANOPY COVER (%)		
	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR (*Populus balsamifera*)	2	0-10	23
SHRUBS			
BEBB WILLOW *(Salix bebbiana)*	23	1-90	100
SNOWBERRY *(Symphoricarpos occidentalis)*	1	0-10	31
RASPBERRY (*Rubus idaeus*)	2	0-10	46
ROSE (*Rosa acicularis*)	10	0-80	54
FORBS			
HORSETAIL *(Equisetum arvense)*	4	0-20	69
DANDELION *(Taraxacum officinale)*	1	0-3	46
STRAWBERRY (*Fragaria virginiana*)	3	0-30	62
CANADA GOLDENROD (*Solidago canadensis*)	2	0-20	39
GRASSES			
KENTUCKY BLUE GRASS *(Poa pratensis)*	2	0-10	31
SMOOTH BROME *(Bromus inermis)*	1	0-10	23
SEDGE *(Carex spp.)*	10	1-40	100
MARSH REEDGRASS *(Calamagrostis canadensis)*	12	0-60	62

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: SUBHYGRIC-HYGRIC

NUTRIENT REGIME: RICH

ELEVATION(MEAN): 600 M

SOIL DRAINAGE: MOD. WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL	1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DMA17: Red osier dogwood/Marsh reedgrass

(Cornus stolonifera/Calamagrostis canadensis)

n=8 This community type was described on alluvial terraces, streambanks, abandoned channels on river floodplains and moist areas around springs and seeps. This community is much richer and has higher moisture levels than the adjacent upland aspen dominated forest, but it is much drier than the willow dominated shrublands in lower slope positions. In the absence of disturbance this community type will likely succeed to a balsam poplar and eventually white spruce dominated community type.

Livestock generally do not prefer this community type because of the dense nature of the understory, but heavy grazing pressure can reduce the understory cover and allow Kentucky bluegrass, timothy and smooth brome to invade.

PLANT COMPOSITION CANOPY COVER (%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR (*Populus balsamifera*)	1	0-3	50
SHRUBS			
RED OSIER DOGWOOD *(Cornus stolonifera)*	50	20-90	100
ROSE *(Rosa acicularis)*	3	0-10	75
SNOWBERRY *(Symphoricarpos occidentalis)*	5	0-20	50
RASPBERRY (*Rubus idaeus)*	5	0-30	50
FORBS			
VEINY MEADOW RUE *(Thalictrum venulosum)*	6	0-30	63
HORSETAIL *(Equisetum arvense)*	4	0-20	50
AMERICAN VETCH (*Vicia americana*)	3	0-20	63
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	7	0-20	88
FOWL BLUEGRASS *(Poa palustris)*	1	0-3	75

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: SUBHYGRIC

NUTRIENT REGIME : RICH

ELEVATION(MEAN): 600 M

SOIL DRAINAGE: MOD. WELL

RANGELAND HEALTH: HEALTHY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL	1500*ESTIMATED

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA18: Silverberry/Smooth brome

(Elaeagnus commutata/Bromus inermis)

n=2 This community type has similar moisture and nutrient conditions to the previously described red osier dogwood dominated community type. Silverberry prefers moist, well drained seepage areas where overland flow provides additional moisture. This species can be found adjacent to streams and rivers, or seepage areas and snow accumulation areas adjacent to aspen stands. Thompson and Hansen (2002) found that these silverberry shrublands are often associated with disturbance in the grassland natural region of southern Alberta. Indeed, smooth brome is dominate in the understory of this community and it has likey invaded off the road allowance adjacent to this site. This community type is very productive because of the favourable moisture conditions, but as succession occurs to an aspen forest many of the palatable grass and forbs are often lost. This community will likely succeed to an Pb/Snowberry/Smooth brome dominated community type.

PLANT COMPOSITION	CANOPY COVER (%)		
	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR (*Populus balsamifera*)	2	0-3	50
SHRUBS			
PRAIRIE ROSE *(Rosa arkansana)*	15	10-20	100
SNOWBERRY *(Symphoricarpos occidentalis)*	5	1-10	100
SILVERBERRY (*Elaeagnus commutata*)	65	50-80	100
FORBS			
STINGING NETTLE *(Urtica dioica)*	2	1-3	100
STRAWBERRY *(Fragaria virginiana)*	5	0-10	50
YARROW (*Achillea millefolium*)	2	0-3	50
GRASSES			
KENTUCKY BLUE GRASS *(Poa pratensis)*	5	0-10	50
SMOOTH BROME *(Bromus inermis)*	12	3-20	100
QUACKGRASS *(Agropyron repens.)*	2	1-3	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: SUBHYGRIC-MESIC

NUTRIENT REGIME: RICH

ELEVATION(MEAN): 600 M

SOIL DRAINAGE: WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION (KG/HA)

TOTAL	1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DMA19: Bog willow

(Salix pedicellaris)

n=4 This community type was described on floating fens in the northern part of the Dry Mixedwood subregion near Gunn and Tulliby lake. Bog willow tends to prefer growing in swamps and fens throughout the Boreal forest of Northern Alberta (Johnson et al. 1995). The slight acidity on these sites limits productivity and these site are difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area. Consequently, this community should be rated as non-use.

PLANT COMPOSITION	Canopy Cover (%)		
	Mean	Range	Const.
Trees			
Paper birch (*Betula papyrifera*)	1	0-1	50
Shrubs			
Bog willow *(Salix pedicellaris)*	70	50-90	100
Forbs			
Marsh cinquefoil *(Potentilla palustre)*	9	1-20	100
Skullcap *(Scutellaria galericulata)*	1	0-3	50
Grasses			
Two stamened sedge *(Carex diandra)*	8	0-20	75
Water sedge (*Carex aquatilis*)	15	0-40	75
Narrow reedgrass (*Calamagrostis stricta*)	13	0-50	50

Environmental Variables

Moisture regime: subhydric

Nutrient regime: Medium

Elevation(mean): 600m

Soil drainage: Imperfectly

Rangeland health rating:
Healthy

Forage Production (kg/ha)

total	1500*Estimate

Ecologically sustainable stocking rate
Non-use

DMA20. Swamp horsetail

(Equisetum fluviatile)

n=3 This wetland community type is found near fresh water and is often associated with shallow water around lake shores or saturated wet spots in old river channels and sloughs. This community is often only found in small isolated spots or in narrow bands around the edge of lakes. As these areas dry, swamp horsetail is often replaced by sedge species. Swamp horsetail is generally unpalatable to livestock and the areas it grows in are often to wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
SWAMP HORSETAIL *(Equisetum fluviatile)*	77	50-90	100
MARSH WILLOW HERB *(Epilobium leptophyllum)*	13	0-40	33
SKULL CAP *(Scutellaria galericulata)*	3	0-10	33
SMALL BEDSTRAW (*Galium trifidum*)	7	0-20	33
GRASSES			
BEAKED SEDGE (*Carex rostrata)*	3	0-10	33
WATER SEDGE (*Carex aquatilis*)	8	0-20	66
CATTAIL (*Typha latifolia*)	1	0-1	33

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN):
RICH
ELEVATION:
586(579-600) M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA21. Tall manna grass

(Glyceria grandis)

n=3 This wetland community type is associated with the edge of the standing water of ponds, sloughs and slow meandering streams. As one moves away from the water to the drier edges the sedge meadow communities are found. This community is often only found in small isolated spots or in narrow bands around the edge of lakes. As these areas dry, tall manna grass is often replaced by sedge species. Tall manna grass is palatable to livestock, however, the areas it grows in are often to wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
SWAMP HORSETAIL *(Equisetum fluviatile)*	3	0-10	33
MARSH WILLOWHERB *(Epilobium leptophyllum)*	1	0-3	33
SMALL BEDSTRAW (*Galium trifidum*)	1	0-3	33
GRASSES			
TALL MANNA GRASS (*Glyceria grandis)*	92	80-97	100
AWNED SEDGE (*Carex atherodes*)	3	3-4	100
CATTAIL (*Typha latifolia*)	1	0-1	66

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC

NUTRIENT REGIME (MEAN
PERMESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
VERY POORLY
RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	2000
TOTAL	2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA22. Common reedgrass

(Phragmites australis)

n=3 This community is found on the edges of shallow lakes and sloughs where the water table is near the surface for most of the growing season. Common reedgrass is common throughout the Boreal forest and this species is very important in binding the soil on river banks. The high sugar content of this plant makes it very palatable to livestock, but the moist ground conditions limits livestock use of these areas. This community type should be rated as non-use.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. *(Salix spp.)*	2	0-5	33
FORBS			
MINT *(Mentha arvense)*	1	0-1	66
SKULLCAP *(Scutellaria galericulata)*	1	0-1	66
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	1	0-3	33
COMMON REEDGRASS (*Phragmites australis)*	58	13-80	100
AWNED SEDGE (*Carex atherodes*)	2	0-5	66
CREEPING SPIKE RUSH (*Eleocharis palustris*)	3	0-10	33

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
603(600-606)M

SOIL DRAINAGE (MEAN):
POORLY

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA23. Reed canary grass

(Phalaris arundinacea.)

n=1 This community type is found along the edges of lakes, rivers, streams and pond margins. The European variety of this species has been widely distributed as a forage and often escapes from pastures and invades into the riparian and wetland areas, displacing more desirable species (Thompson and Hansen 2002). Once this species has invaded riparian areas it often forms monospecific stands because of its heavy sod forming habit (Thompson and Hansen 2002). Reed canary grass is moderately palatable to livestock and when it is grazed heavily the site often becomes invaded by thistle, dandelion and Kentucky bluegrass. This community type should be rated as secondary range and should be grazed in the spring when the canary grass is the most palatable.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
CANADA THISTLE			
(Cirsium arvense)	20	-	100
WATER SMARTWEED			
(Polygonum amphibium)	10	-	100
SOW THISTLE			
(Sonchus spp.)	3	-	100
MARSH HEDGE-NETTLE			
(Stachys palustris)	3	-	100
GRASSES			
REDTOP			
(Agrostis stolonifera)	10	-	100
REED CANARY GRASS			
(Phalaris arundinacea)	50	-	100
SLENDER WHEATGRASS			
(Agropyron trachycaulum)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC
ELEVATION:
600 M
SOIL DRAINAGE:
POORLY
RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.5 HA/AUM

DMA24. Two stamened sedge

(Carex diandra)

n=5 This community type was described in boggy areas adjacent to black spruce and larch dominated community types. Two stamened sedge tends to be found in the wetter areas where there is a floating mat of peat. As these areas dry out two stamened sedge will be replaced by willow, black spruce and larch species. Two stamened sedge is generally unpalatable to livestock and the areas it grows in are often too wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
BOG WILLOW			
(Salix pedicellaris)	6	0-30	40
BOG BIRCH			
(*Betula glandulosa*)	1	0-3	40
FORBS			
BUCK-BEAN			
(Menyanthes trifoliata)	7	0-20	60
MARSH CINQUEFOIL			
(Potentilla palustris)	5	0-10	60
MARSH MARIGOLD			
(Caltha palustris)	3	0-10	40
GRASSES			
TWO STAMENED SEDGE			
(Carex diandra)	82	60-90	100
WATER SEDGE			
(Carex aquatilis)	1	0-3	40

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC
NUTRIENT REGIME (MEAN):
MESOTROPHIC
ELEVATION:
576-606(584) M
SOIL DRAINAGE (MEAN):
WELL

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA25. Rush meadow

(Juncus balticus, J. nodosus)

n=2 This community type was described on slightly saline sandy lakeshores. As the lake recedes rush species will invade into the sand of the lakeshore. Bailey et al. (1992) described rush dominated meadows in a saline sequence in the Yukon and Thompson and Hansen (2002) felt that rush dominated meadows were indicative of heavy grazing pressure in Southern Alberta. Rush species are generally unpalatable to livestock and these community types should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR *(Populus balsamifera)*	1	0-1	50
FORBS			
PRICKLY SOW THISTLE *(Sonchus asper)*	2	0-3	50
GRASSES			
BALTIC RUSH *(Juncus balticus)*	40	1-80	100
KNOTTED RUSH *(Juncus nodosus)*	40	0-80	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC
NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC
ELEVATION:
600 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL
RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 1200*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA26. Creeping spike rush

(Eleocharis palustris)

n=2 Thompson and Hansen (2002) described this type on somewhat alkaline sites in narrow bands along streams, rivers, lake margins and reservoirs. These sites are subject to yearly flooding. Typically these sites are almost pure stands of creeping spike rush. Creeping spike rush is generally unpalatable to livestock and the wet conditions limit livestock use. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
MARSH RAGWORT *(Senecio congestus)*	2	1-3	100
SEASIDE BUTTERCUP *(Ranunculus cymbalaria)*	10	0-20	50
MARSH WILLOW HERB *(Epilobium palustre)*	5	0-10	50
COMMON BURREED *(Sparganium eurycarpum)*	5	0-10	50
GRASSES			
CREEPING SPIKE RUSH *(Eleocharis palustris)*	60	50-70	100
COMMON BULRUSH *(Scirpus acutus)*	5	0-10	50
FOXTAIL BARLEY *(Hordeum jubatum)*	2	0-3	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC
NUTRIENT REGIME (MEAN):
PERMESOTROPHIC
ELEVATION:
600 M
SOIL DRAINAGE (MEAN):
POORLY
RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1200*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA27. Three square rush

(Scirpus pungens)

n=3 This community is an edge community forming dense stands along the edges of smaller streams, marshes and ponds. Three square rush is also tolerant of alkaline (pH 8.5) and saline soils (Thompson and Hansen 2002) and can be found adjacent to saline areas in conjunction with prairie bulrush in the southern part of the region. The palatability of this species is low to moderate. Consequently, three square rush communities are seldom grazed by livestock. This community should be rated non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
SANDBAR WILLOW (*Salix exigua*)	1	0-1	33
FORBS			
SLENDER ARROW-GRASS *(Triglochin palustris)*	4	0-10	66
SEASIDE BUTTERCUP (*Ranunculus cymbalaria*)	2	0-3	66
HORSETAIL (*Equisetum arvense*)	3	0-10	33
GRASSES			
THREE SQUARE RUSH *(Scirpus pungens)*	60	50-70	100
FOXTAIL BARLEY (*Hordeum jubatum*)	4	0-10	66
NUTTALL'S SALTGRASS (*Puccinellia nuttalliana)*	2	0-3	66
ROUGH HAIRGRASS (*Agrostis scabra*)	2	0-3	66

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC
NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC
ELEVATION:
606 M
SOIL DRAINAGE (MEAN):
POORLY

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 1200*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMA28. Prairie bulrush

(Scirpus paludosus)

n=2 This community type is often associated with alkaline and saline areas in semi-permanently flooded shallow edges of marshes and ponds (Thompson and Hansen 2002). Three square rush is often associated with the drier edges of this community type. The palatability of this species is low to moderate. Consequently, prairie bulrush communities are seldom grazed by livestock. This community should be rated non-use.

PLANT COMPOSITION	CANOPY COVER(%) MEAN	RANGE	CONST.
GRASSES			
PRAIRIE BULRUSH *(Scirpus paludosus)*	98	-	100
FOXTAIL BARLEY (*Hordeum jubatum*)	1	-	100
NUTTALL'S SALTGRASS (*Puccinellia nuttalliana*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC
NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC
ELEVATION:
600 M
SOIL DRAINAGE (MEAN):
POORLY

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1200*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
SUGGESTED GRAZING CAPACITY
NON-USE

DMA29. Nuttall's saltgrass

(Puccinellia nuttalliana)

n=2 This community is characteristic of saline and alkaline alluvial deposits adjacent to ponds, lake margins or seepage areas. This community type is fairly productive and heavy grazing will often lead to a community type dominated by foxtail barley. This community should be rated as secondary or primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
GRASSES			
NUTTALL'S SALTGRASS *(Puccinellia nuttalliana)*	97	97-98	100
PRAIRIE BULRUSH *(Scirpus paludosus)*	2	0-3	50
FOXTAIL BARLEY (*Hordeum jubatum*)	1	0-1	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC

ELEVATION:
600 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.6 HA/AUM

DMA30. Foxtail barley

(*Hordeum jubatum)*

n=2 This community represents a disturbance community. It can result from heavy grazing of tame pastures or native meadows in slightly saline areas. This community can also form on the edges of receding lake shores. As the lake drys foxtail barley will invade onto the drier edges. Foxtail barley is generally unpalatable to livestock and the seeds can get stuck in the animals mouth causing sores. Despite the high productivity of these sites they are often never used by livestock and should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
SEASIDE BUTTERCUP (*Ranunculus cymbalaria*)	2	0-3	50
DANDELION *(Taraxacum officinale)*	1	0-1	50
SEA SIDE ARROW-GRASS *(Triglochin maritima)*	1	0-1	50
GRASSES			
FOXTAIL BARLEY *(Hordeum jubatum)*	80	80-81	100
NUTTALL'S SALTGRASS *(Puccinellia nuttalliana)*	1	1-2	100
CREEPING SPIKE RUSH *(Eleocharis palustris)*	5	0-10	50
THREE SQUARE RUSH (*Scirpus pungens*)	2	0-3	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC

ELEVATION:
600M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGE HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DRY MIXEDWOOD SUBREGION

TAME FORAGE COMMUNITIES

Photo 3. Typical Range improvement clearing in the Dry Mixedwood subregion

DM - TAME FORAGE COMMUNITIES

(Cleared areas that have been broken and seeded to tame forage)

Throughout the Dry mixedwood subregion there are sites that have been deforested, broken, and seeded to tame forage. Usually these areas are mesic and moderately well to well drained with good nutrient levels. Because most of these tame forage stands are established on similar sites, the most influential factors affecting plant species composition are stand establishment and grazing regime.

Stand establishment is important because it determines what the initial plant species composition is going to be. Seed bed preparation and the type of seed sown are the two most important factors influencing stand establishment. Seed bed preparation is important because it helps to determine how well the sown seed germinates and establishes. If the seed bed is not well prepared the tame forage stand may establish poorly and native species can become a dominant component of the plant community.

After the stand is established, the grazing regime applied to the stand will determine the plant species composition. Generally, a light to moderate amount of grazing allows the stand to maintain itself while sustained heavy grazing causes the stand to degrade. Damage to a stand due to over grazing occurs more readily while the stand is establishing than it does when the stand is established. This is because the forage plants in an establishing stand have not had time to develop energy reserves in their roots, and are therefore, more susceptible to grazing induced damage.

Well distributed light to moderate grazing will normally maintain a forage stand similar to what was seeded on the site. These stands are generally the most productive and provide the best grazing opportunities for livestock. They are normally considered to be in good to excellent range health. Non use or very light grazing often results in the stand becoming dominated by the forage species that is most competitive under an ungrazed situation. Plant community changes which occur under heavy grazing are dependent on the grazing history (level of use, season of use and duration of the grazing regime). Overgrazed community types develop over a long period of repeated overgrazing. If weedy species such as Tall Buttercup or Canada thistle, become established on overgrazed sites, they can quickly become a dominant species.

We have organized the tame pasture communities within a moisture gradient dry (submesic), mesic and moist (subhygric). Within each moisture regime we have organized the communities along a grazing succession gradient. We have also identified successional sequences that occur in the absence of disturbance. These communities are often dominated by shrub and tree species. The successional diagram for tame pastures in the Dry Mixedwood subregion is outlined below.

Successional sequences of tame pasture communities in the Dry Mixedwood subregion

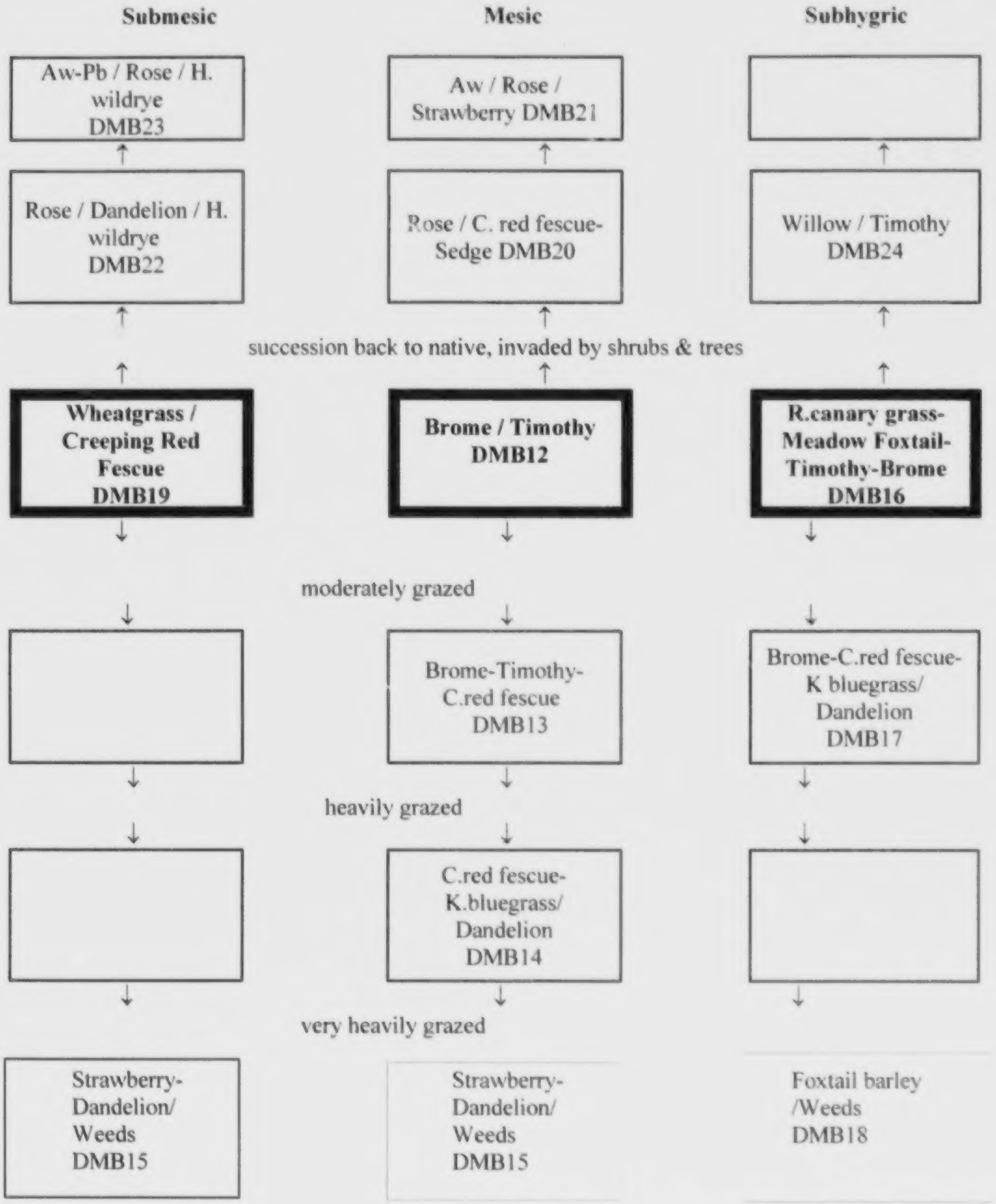

Submesic
Mesic
Subhygric
Aw-Pb / Rose / H. wildrye DMB23
Aw / Rose / Strawberry DMB21
Rose / Dandelion / H. wildrye DMB22
Rose / C. red fescue-Sedge DMB20
Willow / Timothy DMB24
succession back to native, invaded by shrubs & trees
Wheatgrass / Creeping Red Fescue DMB19
Brome / Timothy DMB12
R.canary grass-Meadow Foxtail-Timothy-Brome DMB16
moderately grazed
Brome-Timothy-C.red fescue DMB13
Brome-C.red fescue-K bluegrass/ Dandelion DMB17
heavily grazed
C.red fescue-K.bluegrass/ Dandelion DMB14
very heavily grazed
Strawberry-Dandelion/ Weeds DMB15
Strawberry-Dandelion/ Weeds DMB15
Foxtail barley /Weeds DMB18

Table 3. Production and Stocking rate of Tame forage communities in the Dry Mixedwood subregion

Ecological site	Community number	Community type	Prod. (kg/ha) Total	Sustainable Stocking Rate (ha/AUM)	Sustainable Stocking rate (AUM/ac)
submesic/medium	**Submesic**	**(Dry)**			
	DMB19	Wheatgrass-Creeping red fescue	1000	0.4-0.5	0.8-1.0
	DMB22	Rose/Dandelion/ Hairy wildrye	1000	2.0	0.2
	DMB23	Aw-Pb/Rose/Hairy wildrye	1000	2.0	0.2
mesic/medium	**Mesic**				
	DMB12	Brome-Timothy	3884	0.3-0.4	1.0-1.3
	DMB13	Creeping red fescue-Brome-Timothy	2120	0.45-0.58	0.7-0.9
	DMB14	Creeping red fescue-Kentucky bluegrass	2120	0.81-1.35	0.3-0.5
	DMB15	Strawberry-Dandelion-Weeds	1500	>1.35	<0.3
	DMB20	Rose/Creeping red fescue-Sedge	2000	1.0	0.4
	DMB21	Aw/Rose/Strawberry	2060	1.5	0.3

Ecological site	Community number	Community type	Prod. (kg/ha) Total	Sustainable Stocking Rate (ha/AUM)	Sustainable Stocking rate (AUM/ac)
subhygric/rich	**Subhygric**	**(Moist)**			
	DMB16	Reed canary grass-Meadow foxtail-Smooth brome-Timothy	2995	0.3-0.4	1.0-1.3
	DMB17	Brome-K. bluegrass-C. red fescue/Dandelion	2500	0.45-0.58	0.7-0.9
	DMB18	Foxtail barley/Weeds	1500	>1.35	<0.3
	DMB24	Willow/Timothy	2500	1.0	0.4

Tame Grass Plant Communities - Dry Mixedwood Subregion

1. Tame forage stand dominated by tall productive species..2
Tame forage stand modified by grazing, aspen or shrub invasion..................................4
2. Subhygric sites dominated by reed canary grass, meadow foxtail or timothy..................
.........**Reed Canary Grass / Meadow Foxtail / Timothy (DMB16)**
Mesic or submesic sites dominated by smooth brome, meadow brome, wheatgrass, timothy or other tall, productive species..3
3. Submesic sites with wheatgrass and creeping red fescue..
.........**Wheatgrass-Creeping Red Fescue (DMB19)**
Mesic sites dominated by smooth brome, meadow brome, timothy or other tall, productive spp
....**Brome / Timothy (DMB12)**
4. Tame pasture invaded by aspen, balsam poplar or shrub species..................................9
Species composition modified by grazing...5
5. Pasture moderately to heavily grazed; tall, productive spp. and grazing resistant spp co-dominate the site..........**Creeping Red Fescue- Brome-Timothy(DMB13)**
Pasture heavily to very heavily grazed; grazing resistant and / or weedy spp dominate the site...6
6. Pasture heavily grazed; grazing resistant spp dominate the site, dandelion, strawberry common 7
Pasture very heavily grazed; weedy invaders dominate the site......................................8
7. Moist sites; dominated by grazing resistant spp..
... **Brome-Creeping Red Fescue- Kentucky Bluegrass / Dandelion (DMB17)**
Mesic sites; dominated by grazing resistant spp...
... **Creeping Red Fescue / Kentucky Bluegrass / Dandelion (DMB14)**
8. Mesic or submesic sites dominated by strawberry, dandelion, Canada thistle and other weedy spp ....**Strawberry / Dandelion / Weeds (DMB15)**
Subhygric sites dominated by foxtail barley, Canada thistle or other weedy spp.............
...........................**Foxtail barley / Weeds (DMB18)**
9. Old tame pastures with Aspen and Balsam Poplar invasion...10
Newer tame pastures with shrub invasion, little tree growth...11
10. Mesic sites with strawberry .... **Aw/Rose/Strawberry (DMB21)**
Submesic sites with hairy wildrye....................**Aw-Pb/Rose/Hairy wildrye (DMB23)**
11. Submesic sites dominated by hairy wildrye and rose..
...... **Rose/Dandelion/Hairy wildrye (DMB22)**
Mesic to subhygric sites...12
12. Mesic sites with marsh reedgrass and sedge...
...... **Rose/Creeping red fescue-Sedge (DMB20)**
Subhygric sites with willow invading................................ **Willow/Timothy (DMB24)**

DMB12. Brome-Timothy

(Bromus inermis, B. biebersteinii-Phleum pratense)

n=9 This community type represents healthy condition tame pasture on mesic sites that were seeded with a timothy, smooth brome, meadow brome, creeping red fescue, alfalfa, clover mixture. Timothy establishes much quicker than creeping red fescue or smooth brome on pastures that have been recently seeded. Eventually creeping red fescue and smooth brome will outcompete timothy and this community will likely become dominated by creeping red fescue and smooth brome. Heavy to moderate grazing pressure will cause the tall growing grass species (Brome, timothy) to decline and allows low growing Kentucky bluegrass and dandelion to increase to form communities DMB13 and DMB14. Continued heavy grazing pressure will eventually lead to a community dominated by dandelion and weeds (DMB15). Light or no grazing or poor seed establishment will allow native trees, shrubs, forbs and grass to invade onto these sites to form communities DMB20 and 21.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	1	0-4	22
FORBS			
CLOVER *(Trifolium spp.)*	4	0-30	44
DANDELION *(Taraxacum officinale)*	10	0-45	67
WILD STRAWBERRY *(Fragaria virginiana)*	15	0-47	78
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	7	0-35	78
TIMOTHY *(Phleum pratense)*	8	0-60	46
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-3	33
SMOOTH BROME (*Bromus inermis*)	49	25-77	100
MEADOW BROME (*Bromus biebersteinii*)	10	0-56	44

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
MEDIUM-RICH

ELEVATION:
457-606 (587)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 3884

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.3-0.4 HA/AUM (1.0-1.3 AUM/AC)

DMB13. Creeping red fescue- Brome-Timothy

(Festuca-rubra-Bromus spp.-Phleum pratense)

n=12 This community type develops on mesic sites that were seeded to a mixture of brome, timothy or other productive species with some grazing resistant species like creeping red fescue, A history of moderate to heavy grazing pressure results in a decline in the proportions of tall, productive species and an increase in the grazing resistant species. Heavy continuous grazing will allow Kentucky bluegrass and dandelion to invade into the stand to form a Kentucky bluegrass or Quackgrass/Dandelion dominated community type. This community type is usually considered to be in fair to good condition (healthy with problems).

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN (*Populus tremuloides*)	2	0-10	33
SHRUBS			
ROSE (*Rosa acicularis*)	2	0-5	75
FORBS			
CLOVER *(Trifolium spp.)*	19	0-72	83
DANDELION *(Taraxacum officinale)*	10	0-31	83
STRAWBERRY *(Fragaria virginiana)*	8	0-35	50
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	41	9-78	100
TIMOTHY *(Phleum pratense)*	9	0-25	83
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	0-23	67
SMOOTH BROME (*Bromus inermis*)	15	0-75	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
609M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 2120

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.45-0.58 HA/AUM (0.7-0.9 AUM/AC)

DMB14. Creeping red fescue-Kentucky bluegrass/Dandelion

(Festuca rubra-Poa pratensis/ Taraxacum officinale)

n=31 This community is representative of heavily grazed mesic sites and is dominated by grazing resistant species like Kentucky bluegrass, creeping red fescue or quackgrass. Heavy grazing tends to favour the growth of these low-growing or rhizomatuous species and that of weedy or disturbance induced species such as dandelion. These sites have poor health ratings and lower production than community types dominated by species like timothy and brome.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
RASPBERRY. (*Rubus idaeus.*)	1	0-30	25
FORBS			
CLOVER (*Trifolium spp.*)	13	0-45	100
DANDELION (*Taraxacum officinale*)	21	0-42	91
STRAWBERRY (*Fragaria virginiana*)	2	0-4	72
GRASSES			
CREEPING RED FESCUE (*Festuca rubra*)	15	0-75	40
TIMOTHY (*Phleum pratense*)	3	0-13	53
SMOOTH BROME (*Bromus inermis*)	2	0-3	25
KENTUCKY BLUEGRASS (*Poa pratensis*)	15	0-36	78
QUACKGRASS (*Agropyron repens*)	5	0-45	20

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
576-701(658)M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 2120

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.81-1.35 HA/AUM (0.3-0.5 AUM/AC)

DMB15. Strawberry-Dandelion-Weeds

(Fragaria virginiana-Taraxacum officinale-Cirsium arvensis)

n=6 This community represents extremely heavily grazed mesic pasture sites. Generally, all that is left growing on these areas is dandelion. There also tends to be a lot of bare soil, which provides a place for noxious weeds (Canada thistle) to become established. This community would be rated unhealthy.

Plant Composition Canopy Cover(%)

	Mean	Range	Const.
Forbs			
Clover *(Trifolium spp.)*	1	0-6	50
Dandelion *(Taraxacum officinale)*	44	19-75	100
Canada thistle (*Cirsium arvense*)	5	0-29	33
Grasses			
Timothy *(Phleum pratense)*	2	0-7	67
Creeping red fescue *(Festuca rubra)*	1	0-1	67
Kentucky Bluegrass *(Poa pratensis)*	17	3-74	100

Environmental Variables

Moisture Regime (mean):
Mesic

Nutrient Regime (mean):
Medium

Elevation:
455m

Soil Drainage (mean):
well

Rangeland health rating:
Unhealthy

FORAGE PRODUCTION (KG/HA)

Total 1500

Ecological sustainable stocking rate
>1.35 ha/aum (<0.3 Aum/Ac)

DMB16. Reed canary grass-Meadow foxtail-Smooth brome-Timothy

(Phalaris arundinacea-Alopecurus pratensis-Bromus inermis-Phleum pratense)

n=2 This community type represents seeded areas on moist (subhygric) rich sites. Reed canary grass and meadow foxtail establish quickly in wet places that have been disturbed and will dominate very wet sites. Care should be taken when seeding reed canary grass. It appears that the commercial cultivars can be very invasive (Invasive plants of natural habitats 1992). In areas that have supported reed canary grass monocultures for extended periods many have seed banks devoid of other species. Meadow foxtail also seems particularly prone to increasing on moister grazed sites as it starts growth and heads out early. Meadow foxtail becomes unpalatable and is avoided by livestock if it is not grazed early enough in the spring.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
AMERICAN VETCH *(Vicia americana)*	1	0.1	50
DANDELION *(Taraxacum officinale)*	3	2-3	100
STRAWBERRY *(Fragaria virginiana)*	13	0-26	50
CLOVER (*Trifolium spp.*)	15	6-25	100
GRASSES			
REED CANARY GRASS *(Phalaris arundinacea)*	28	0-55	50
TIMOTHY *(Phleum pratense)*	5	2-7	100
SMOOTH BROME (*Bromus inermis*)	21	0-41	50
CREEPING RED FESCUE (*Festuca rubra*)	6	1-11	100
MEADOW FOXTAIL (*Alopecurus pratensis*)	11	0-22	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
579-606M

SOIL DRAINAGE (MEAN):
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 2995

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.3-0.4 HA/AUM (1.0-1.3 AUM/Ac)

DMB17. Brome-Creeping red fescue-Kentucky bluegrass/Dandelion

(Bromus spp.-Festuca rubra-Poa pratensis/Taraxacum officinale)

n=3 This community represents moderately grazed subhygric sites. Heavy continuous grazing will allow Kentucky bluegrass and dandelion to invade into the stand to form a Kentucky bluegrass or Quackgrass/Dandelion dominated community type. Continued heavy grazing pressure may eventually lead to site dominated by foxtail barley. This community type is usually considered to be in fair to good condition (healthy with problems).

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
CLOVER *(Trifolium spp.)*	19	6-31	100
DANDELION *(Taraxacum officinale)*	29	15-38	100
HORSETAIL *(Equisetum arvense)*	4	2-6	100
STRAWBERRY *(Fragaria virginiana)*	2	1-2	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	62	40-80	100
MEADOW BROME *(Bromus biebersteinii)*	21	17-23	100
SEDGE *(Carex spp.)*	16	1-45	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	1-10	100
TIMOTHY *(Phleum pratense)*	3	2-4	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC
ELEVATION:
667M
SOIL DRAINAGE (MEAN):
MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 2500

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.45-0.58 HA/AUM (0.7-0.9 AUM/AC)

DMB18. Foxtail barley/Weeds

(Hordeum jubatum/Cirsium arvensis)

n=1 This community type develops on heavily grazed subhygric moist sites. This community was found in depressional areas and on river flood plains. Foxtail barley is also well adapted to growing on saline soils (Bailey et al. 1992). It is likely that the soils of this site are slightly saline. This community type would be considered non-use because the principle forage species foxtail barley is generally unpalatable to livestock. Foxtail barley can also cause injury to livestock. The sharp seeds and awns may work their way into tongues, gums, eyes, noses or skins of animals.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
ALFALFA *(Medicago falcata.)*	11	-	100
DANDELION *(Taraxacum officinale)*	1	-	100
SWEET CLOVER *(Melilotus officinalis)*	4	-	100
CLOVER *(Trifolium spp.)*	5	-	100
GRASSES			
FOXTAIL BARLEY *(Hordeum jubatum)*	69	-	100
SMOOTH BROME *(Bromus inermis)*	1	-	100
TIMOTHY *(Phleum pratense)*	18	-	100
FOWL BLUEGRASS *(Poa palustris)*	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC
NUTRIENT REGIME (MEAN):
RICH
ELEVATION:
457-606(597)M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1500

ECOLOGICAL SUSTAINABLE STOCKING RATE
>1.35 HA/AUM (<0.3 AUM/AC)

DMB19. Wheatgrass-Creeping red fescue-Timothy

(Agropyron pectiniforme-Festuca rubra-Phleum pratense)

n=1 This community type occurs on cleared pastures that were seeded on submesic (dry) sites in the eastern part of the subregion near St. Paul. These sites occur on very stoney well drained soils and it was thought crested wheatgrass would grow well in these site conditions. These pastures were seeded in the late 1980's with a mixture of pubscent wheatgrass, timothy, creeping red fescue, alfalfa, crested wheatgrass and sweet clover. Crested wheatgrass and creeping red fescue were found to dominate the dry hilltops and timothy was found on the moist lowland sites. There was little evidence of pubescent wheatgrass, alfalfa or sweet clover surviving from the original mix. These pastures often undergo succession to a shrub dominated community (DMB11) and then a deciduous dominated community type (DMB9).

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE			
(*Rosa acicularis*)	1	-	100
FORBS			
CLOVER			
(Trifolium spp.)	1	-	100
DANDELION			
(Taraxacum offincinale)	29	-	100
BEARBERRY			
(Arctostaphylos uva-ursi)	1	-	100
GRASSES			
CREEPING RED FESCUE			
(Festuca rubra)	7	-	100
CRESTED WHEATGRASS			
(Agropyron pectiniforme)	11	-	100
TIMOTHY			
(Phleum pratense)	5	-	100
KENTUCKY BLUEGRASS			
(Poa pratensis)	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
579M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 1000

ECOLOGICAL SUSTAINABLE STOCKING RATE
0.4-0.5 HA/AUM (0.8-1.0 AUM/AC)

DMB20. Rose/Creeping red fescue-Sedge

(Rosa acicularis/Festuca rubra-Carex spp.)

n=5 As seeded pastures undergo succession back to a deciduous dominated forest they are often invaded by rose and willow before the trees become dominant. This community represents an early successional community of DMB21. Burning, cultivation and spraying with herbicide are all options that can be considered in order to control shrub regrowth. On mesic sites marsh reedgrass tends to be the native grass that invades. In contrast hairy wildrye will invade on drier sites.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN (*Populus tremuloides*)	6	0-15	40
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	12	1-25	100
FORBS			
CLOVER *(Trifolium spp.)*	7	0-14	80
DANDELION *(Taraxacum officinale)*	2	1-7	100
WILD STAWBERRY *(Fragaria virginiana)*	8	1-23	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	19	0-64	80
TIMOTHY *(Phleum pratense)*	4	0-12	60
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-7	60
HAIRY WILDRYE (*Elymus innovatus*)	1	0-3	40
MARSH REEDGRASS (*Calamagrostis canadensis*)	3	0-13	20
SEDGE (*Carex spp.*)	7	0-24	80

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
603(600-606)M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 2000

ECOLOGICAL SUSTAINABLE STOCKING RATE
1.0 HA/AUM(0.4 AUM/AC)

DMB21. Aw/Rose/Strawberry

(Populus tremuloides/Rosa acicularis/Fragaria virginiana)

n=5 This community type occurs in mesic cultivated pastures that are being invaded by aspen. No grazing pressure or only light grazing pressure allows aspen to recolonize these cultivated pastures. Burning, cultivation and spraying with herbicide are all options that can be considered in order to control aspen regrowth.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN (*Populus tremuloides*)	14	8-20	100
BALSAM POPLAR (*Populus balsamifera*)	1	0-1	40
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	3	1-4	100
WILLOW (*Salix bebbiana*)	1	0-4	20
SNOWBERRY (*Symphoricarpos occidentalis*)	1	0-2	60
FORBS			
CLOVER *(Trifolium spp.)*	2	0-5	60
DANDELION *(Taraxacum offincinale)*	15	0-40	80
WILD STAWBERRY *(Fragaria virginiana)*	5	2-12	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	2	0-5	40
TIMOTHY *(Phleum pratense)*	1	0-4	20
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	0-8	60
HAIRY WILDRYE (*Elymus innovatus)*	6	1-15	100
MARSH REEDGRASS (*Calamagrostis canadensis*)	1	0-4	40

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
600M

SOIL DRAINAGE (MEAN):
WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 2060

ECOLOGICAL SUSTAINABLE STOCKING RATE
1.5 HA/AUM (0.3 AUM/AC)

DMB22. Rose/Dandelion/Hairy wildrye

(Rosa acicularis/Taraxacum officinale/Elymus innovatus)

n=1 This community represents early invasion of shrubs onto drier (submesic) sites on pastures in the St. Paul area of the subregion. As seeded pastures undergo succession back to a deciduous dominated forest they are often invaded by rose and willow before the trees become dominant. This community represents an early successional community of DMB23. Burning, cultivation and spraying with herbicide are all options that can be considered in order to control shrub regrowth.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN (*Populus tremuloides*)	1	-	100
BALSAM POPLAR (*Populus balsamifera*)	1	-	100
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	6	-	100
WILLOW (*Salix bebbiana*)	4	-	100
SNOWBERRY (*Symphoricarpos occidentalis*)	2	-	100
FORBS			
CLOVER *(Trifolium spp.)*	3	-	100
DANDELION *(Taraxacum offincinale)*	22	-	100
WILD STAWBERRY *(Fragaria virginiana)*	3	-	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	8	-	100
TIMOTHY *(Phleum pratense)*	1	-	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	4	-	100
HAIRY WILDRYE (*Elymus innovatus)*	4	-	100
CRESTED WHEATGRASS (*Agropyron pectiniforme*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
600M

SOIL DRAINAGE (MEAN):
WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 1000

ECOLOGICAL SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

DMB23. Aw-Pb/Rose/Hairy wildrye

(Populus tremuloides-P. balsamifera/Rosa acicularis/Elymus innovatus)

n=1 This community represents old pastures on dry sandy sites that were cleared of trees and aerial seeded with brome, timothy, crested wheatgrass and creeping red fescue in the 1980's near St. Paul. In the absence of disturbance these sites have been slowly encroached by trees and the understory has been invaded by hairy wildrye. These sites are moderately productive and are easily accessible to livestock. Consequently, they should be rated as primary or secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN (*Populus tremuloides*)	15	-	100
BALSAM POPLAR (*Populus balsamifera*)	35	-	100
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	6	-	100
WILLOW (*Salix bebbiana*)	1	-	100
SNOWBERRY (*Symphoricarpos occidentalis*)	1	-	100
FORBS			
CLOVER *(Trifolium spp.)*	1	-	100
DANDELION *(Taraxacum offincinale)*	4	-	100
WILD STAWBERRY *(Fragaria virginiana)*	1	-	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	9	-	100
SLENDER WHEATGRASS *(Agropyron trachycaulum)*	1	-	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	-	100
HAIRY WILDRYE (*Elymus innovatus)*	24	-	100
CRESTED WHEATGRASS (*Agropyron pectiniforme*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
600M

SOIL DRAINAGE (MEAN):
WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 1000

ECOLOGICAL SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

DMB24. Willow/Timothy

(Salix spp./Phleum pratense)

n=1 This community represents invasion of shrubs and trees onto tame pasture on moister sites. Willow favours growing on these moist, richer sites and will often invade off the edges of the pasture. Burning, cultivation and spraying with herbicide are all options that can be considered in order to control shrub regrowth.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW (*Salix bebbiana*)	19	8-30	100
FORBS			
CLOVER *(Trifolium spp.)*	3	2-3	100
DANDELION *(Taraxacum offincinale)*	27	4-49	100
WILD STAWBERRY *(Fragaria virginiana)*	6	0-12	100
HORSETAIL (*Equisetum arvense*)	1	0-2	50
GRASSES			
TIMOTHY *(Phleum pratense)*	45	43-46	100
SEDGE *(Carex spp.)*	5	0-9	50
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-1	50
SMOOTH BROME (*Bromus inermis*)	2	0-3	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
600M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL 2500

ECOLOGICAL SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DRY MIXEDWOOD SUBREGION

DECIDUOUS FOREST COMMUNITY TYPES

Photo 4. Aw/Rose/Tall forb community type in the Dry Mixedwood subregion

Photo 5. Aw/Hazelnut community is very common in the eastern ecodistricts of the Dry Mixedwood subregion

DM - DECIDUOUS FOREST COMMUNITIES

All of the deciduous stands sampled in the Dry Mixedwood subregion were dominated by aspen and balsam poplar and had a significant rose understory. In both Brierley et al. (1985) and Beckingham's (1993) deciduous classifications in the same subregion rose was the dominant or codominant understory shrub species in nearly every aspen-dominated community type. In Beckingham's classification rose was present in 205 of the 209 aspen-dominated stands. Rose is well adapted to a wide variety of site conditions with a moderate supply of nutrients. The moisture regime can vary from submesic to subhygric and the sites can be well to imperfectly drained.

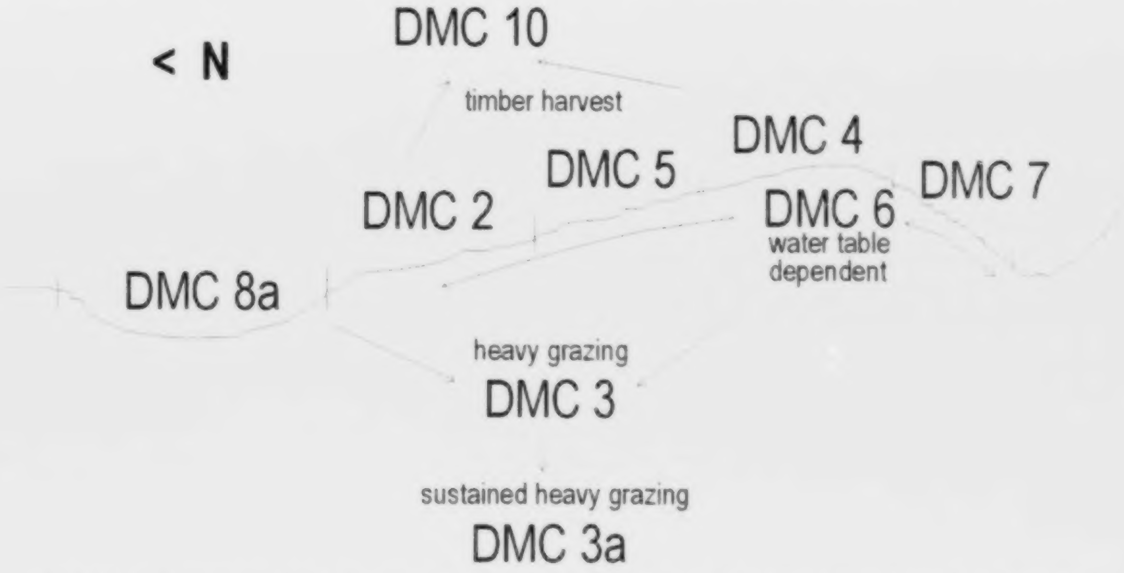
It appears the secondary forb and shrub species in association with rose characterize the ecological conditions of aspen forest types in the Dry Mixedwood subregion. Indeed, many of the deciduous types in Beckingham's classification were based on the secondary shrub species.

In the Dry Mixedwood 22 deciduous community types were described. The Aw/Blueberry type is found on well-drained, sandy sites in association with jack pine stands and the Aw/Dwarf bilberry/Bearberry/Mountain ricegrass community is found on slightly moister sites with loamy sand textures . The Aspen/Alder type is found on moist, moderately drained sites at higher elevations and the Aspen/Rose(Aw/Rose/Tall forb, Aw/Rose/Low forb, Aw/Rose-Hazelnut, Aw/Buffaloberry-Rose and Aw/Saskatoon-Rose) site types are moderately well-drained, with mesic moisture and mesotrophic nutrient regimes. Beckingham (1993), felt the Aspen/Buffaloberry type occurred on somewhat nutrient-poor soils. The Aspen/Rose/Tall and Low forb community types occupy similar site conditions. The difference between these two types may be related to grazing pressure. The Aspen/Rose/Low forb type has a low total cover of forbs (48%), whereas the Aspen/Rose/Tall forb type has a high total cover of forbs (81%). The increased grazing pressure in the Aspen/Rose/Low forb type may have caused a reduction in forb cover. The Aspen/Hazelnut type is found on mesic, well-drained sites and appears to be the reference deciduous type for this subregion, particularly in the more eastern ecodistricts. The hazelnut-dominated community types were very common within the eastern ecodistricts in the southern part of the subregion (St. Paul, Bonnyville, Smoky Lake). The presence of hazelnut appears to be indicative of warmer sites (Beckingham 1993) and have some fire history (Downing and Karpuk 1992).

A number of balsam poplar-dominated community types were described in the western and eastern ecodistricts. These communities are typical of forests situated along the flood plains of rivers and seepage areas in lower slope positions. The Balsam poplar-Aspen/Horsetail and Balsam poplar-Aspen/Willow type are found on moist poorly drained sites adjacent to some willow shrublands.

The sequence of the dominant community types in the landscape of the eastern ecodistricts is outlined in figure 5.

Ecological site phase: d.1 low bush cranberry - Aw


< N
DMC 10
timber harvest
DMC 4
DMC 5
DMC 7
DMC 2
DMC 6
water table dependent
DMC 8a
heavy grazing
DMC 3
sustained heavy grazing
DMC 3a

NOTE: DMC 5 may not be present in eastern areas of the Dry Mixedwood subregion.

Figure 5. Overview of deciduous communities in the Dry Mixedwood subregion.

Table 4. Forage production for the deciduous communities and the ecological site phases described in the Dry Mixedwood subregion

Ecological site	Community number	Community type	Productivity (kg/ha)				Sustainable Stocking rate 'ha/AUM' (Aum/ac)
			Grass	Forb	Shrub	Total	
b submesic/medium	**Ecological site phase**	**b2 blueberry Aw(Bw)**	**324**	**220**	**169**	**701**	**2.6(0.15)**
	DMC1	Aw/Dwarf bilberry/Bearberry/Mtn. ricegrass	339	263	145	728	2.5(0.15)
	DMC1a	Aw/Blueberry	*1005*	*169*	*173*	*1312*	1.4*(0.3)
d mesic/medium	**Ecological site phase**	**d1 low bush cranberry Aw**	**125**	**474**	**434**	**1043**	**1.7(0.25)**
	DMC2	Aw/Rose/Tall forb	169	507	282	958	1.9(0.2)
	DMC4	Aw-Pb/Hazelnut	77	457	441	995	1.8(0.2)
	DMC5	Aw/Buffaloberry	19	658	219	897	2.1(0.2)
	DMC6	Aw/Alder	170	356	556	1082	1.7(0.25)
	DMC7	Aw/Saskatoon	153	419	524	1096	1.7(0.25)
	DMC8a	Pb-Aw/Willow	155	520	130	885	Non-use

Table 4. Forage production for the deciduous communities and the ecological site phases described in the Dry Mixedwood subregion

	Ecological site phase	**d1 grazed Aw**	**285**	**339**	**300**	**937**	**2.0(0.2)**
	DMC3	Aw/Rose/Low forb	285	339	300	937	2.0(0.2)
	DMC3a	Aw-Pb/Dandelion/K. bluegrass	*681*	*380*	*117*	*1178*	2.0*(0.2)
	Ecological site phase	**d1 harvested Aw**	**626**	**580**	**810**	**2013**	**2.0(0.2)**
	DMC10	Deciduous cutblocks	626	580	810	2013	2.0(0.2)
e subhygric/rich	**Ecological site phase**	**e1 dogwood Aw-Pb**	**167**	**382**	**499**	**1060**	**1.7(0.25)**
	DMC8	Pb-Aw/Red osier dogwood	13	213	713	950	Non-use
	DMC11	Pb/Honeysuckle	*324*	*687*	*200*	*1211*	Non-use
	DMC12	Pb/River alder	*245*	*544*	*397*	*1187*	Non-use
	DMC13	Pb-Aw/Silverberry	*200*	*300*	*600*	*1100*	1.5*(0.3)
	DMC14	Pb/Snowberry	*18*	*230*	*896*	*1204*	1.5*(0.3)
	Ecological site phase	**e1a grazed dogwood Aw-Pb**	***800***	***300***	***100***	***1200***	***2.0*(0.2)***
	DMC18	Pb-Bw/Kentucky bluegrass	*700*	*300*	*150*	*1150*	2.0*(0.2)
	DMC19	Pb/Smooth brome	*900*	*300*	*50*	*1250*	2.0*(0.2)

Table 4. Forage production for the deciduous communities and the ecological site phases described in the Dry Mixedwood subregion

f hygric/rich	**Ecological site phase**	**f1 horsetail Pb-Aw**	**188**	**544**	**302**	**1034**	**Non-use**
	DMC9	Pb-Aw/Horsetail	188	544	302	1034	Non-use
j subhydric/medium	**Ecological site phase**	**j1 treed poor fen**	***150***	***250***	***350***	***750***	**Non-use**
	DMC16	Bw/Labrador tea	*150*	*250*	*350*	*750*	Non-use
k subhydric/rich	**Ecological site phase**	**k1 treed rich fen**	***2000***	***100***	***50***	***2150***	**1.0*(0.4)**
	DMC15	Pb/Reedgrass	*2000*	*100*	*50*	*2150*	1.0*(0.4)
	Ecological site phase	**k1a disturbed treed rich fen**	***300***	***300***	***400***	***1000***	**Non-use**
	DMC17	Bw/Raspberry	*300*	*300*	*400*	*1000*	Non-use

Note: Forage production in italics is an estimate and stocking rate with an asterix (*) is an estimate

Deciduous Community Types - Dry Mixedwood

1. Aspen dominated community types..........2
   Balsam poplar and paper birch dominated community types..........11
2. Dry sandy sites with blueberry and bearberry in understory..........3
   Mesic sites dominated by alder, buffaloberry, saskatoon, rose, forbs and hazelnut (also includes grazed sites)..........4
3. Sandy sites dominated by blueberry..........**DMC1a Aw/Blueberry**
   Loamy sand sites dominated by dwarf bilberry, bearberry and Mtn. ricegrass ....**DMC1 Aw/D.bilberry/Bearberry/Mtn. ricegrass**
4. Grazed sites dominated by dandelion, Kentucky bluegrass or clover ....**DMC3a Aw/Dandelion/Kentucky bluegrass**
   Ungrazed sites dominated by alder, buffaloberry, saskatoon, hazelnut or rose..........5
5. Beaked hazelnut dominates the understory..........**DMC4 Aw-Pb/Hazelnut**
   Sites dominated by alder, buffaloberry, rose, saskatoon (includes cutblocks)..........6
6. Alder dominates the understory..........**DMC6 Aw/Alder**
   Buffaloberry, saskatoon, rose dominate understory (includes cutblocks)..........7
7. Slope communities dominated by saskatoon......... **DMC7 Aw/Saskatoon**
   Rose or buffaloberry dominated understory (includes cutblocks)..........8
8. Buffaloberry dominates the understory..........**DMC5 Aw/Buffaloberry**
   Rose and forb dominated understory (includes cutblocks)..........9
9. Deciduous cutblocks..........**DMC10 Deciduous cutblocks**
   Rose, forb dominated understory..........10
10. Tall forb dominated (fireweed, showy aster, yellow peavine, wild sarsaparilla.... ....**DMC2 Aw/Rose/Tall forb**
    Low forb dominated (bunchberry, twinflower, strawberry, wintergreen) ....**DMC3 Aw/Rose/Low forb**
11. Ungrazed birch or balsam poplar dominated sites..........13
    Grazed birch or balsam poplar dominated sites (dandelion, Kentucky bluegrass) 12
12. Smooth brome dominates understory..........**DMC19 Pb/Smooth brome**
    Kentucky bluegrass and dandelion dominated........**DMC18 Pb/Dandelion/K. bluegrass**
13. Balsam poplar dominated..........15
    Paper birch dominated..........14
14. Boggy area that has recently burned..........**DMC16 Bw/Labrador tea**
    Wet sites with recent beaver activity..........**DMC17 Bw/Raspberry**
15. Very wet site, grass meadows invaded by balsam poplar...**DMC15 Pb/Reedgrass**
    Upland sites dominated by red osier dogwood, river alder, snowberry, silverberry, horsetail or willow..........16
16. Riverine forests dominated by red osier dogwood in understory..**DMC8 Pb-Aw/Red osier dogwood**
    Willow, river alder, snowberry, horsetail or silverberry dominates understory..........17
17. Willow dominates the understory.......... **DMC8a Pb-Aw/Willow**
    River alder, snowberry, horsetail or silverberry dominates understory..........18
18. Riverine forest dominated by river alder..........**DMC12 Pb/River alder**

Snowberry, horsetail or silverberry dominates understory..19
19. Very moist sites dominated by horsetail in the understory..**DMC9 Pb-Aw/Horsetail**
Snowberry or silverberry dominates understory...20
20. Snowberry dominates the understory..................**DMC14 Pb/Snowberry**
Silverberry dominates the understory..................**DMC13 Pb-Aw/Silverberry**

DMC1. Aw/Dwarf bilberry/Bearberry/Mountain ricegrass

(Populus tremuloides/Vaccinium caespitosum/Arctostaphylos uva-ursi/Oryzopsis asperifolia)

n=26 This community type is found on dry, well-drained, loamy-sand sites and is part of the blueberry ecosite outlined by Beckingham and Archibald (1996). The canopy cover of aspen is open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this community type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease. This community type would be considered to be primary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN			
(Populus tremuloides)	43	20-75	100
WHITE SPRUCE			
(Picea glauca)	2	0-15	42
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	8	0-21	92
SASKATOON			
(Amelanchier alnifolia)	4	0-22	77
BLUEBERRY			
(Vaccinium myrtillus)	2	0-13	50
DWARF BILBERRY			
(*Vaccinium caespitosum*)	4	0-9	81
FORBS			
BEARBERRY			
(Arctostaphylos uva-ursi)	7	0-36	75
TWINFLOWER			
(Linnaea borealis)	8	0-22	88
LINDLEY'S ASTER			
(Aster ciliolatus)	2	0-6	89
WILD LILY OF THE VALLEY			
(Maianthemum canadense)	5	2-9	100
YELLOW PEAVINE			
(*Lathyrus ochroleucus*)	7	3-31	100
STRAWBERRY			
(Fragaria virginiana)	5	0-12	96
GRASSES			
MOUNTAIN RICE GRASS			
(Oryzopsis asperfolia)	7	0-22	81
HAIRY WILDRYE			
(*Elymus innovatus*)	7	0-16	96
PURPLE OATGRASS			
(*Schizachne purpurascens*)	3	0-10	81
NORTHERN RICEGRASS			
(*Oryzopsis pungens*)	1	0-10	35

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC
NUTRIENT REGIME:
POOR
ELEVATION:
455 M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	339(166-442)
FORBS	263(64-610)
SHRUBS	145(56-266)
TOTAL	728(230-1284)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.5 HA/AUM(0.15AUM/AC)

DMC1a. Aw/Blueberry

(Populus tremuloides/Vaccinium myrtillus)

n=1 This community type is found on dry, well-drained, sandy sites interspersed with stands of jack pine and is part of the blueberry ecosite outlined by Beckingham and Archibald (1996). The canopy cover of aspen is open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this community type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease. This community type would be considered to be primary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN			
(Populus tremuloides)	35	-	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	2	-	100
LOW BUSH CRANBERRY			
(Viburnum edule)	2	-	100
BLUEBERRY			
(Vaccinium myrtillus)	40	-	100
FORBS			
BEARBERRY			
(Arctostaphylos uva-ursi)	20	-	100
TWINFLOWER			
(Linnaea borealis)	5	-	100
STRAWBERRY			
(Fragaria virginiana)	5	-	100
WILD LILY OF THE VALLEY			
(Maianthemum canadense)	15	-	100
WILD SARSAPARILLA			
(Aralia nudicaulis)	7	-	100
GRASSES			
HAIRY WILDRYE			
(*Elymus innovatus*)	5	-	100
NORTHERN RICEGRASS			
(*Oryzopsis pungens*)	4	-	100
LICHEN			
REINDEER LICHEN			
(*Cladina mitis*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC-SUBXERIC
NUTRIENT REGIME:
POOR
ELEVATION:
455 M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1005
FORBS	169
SHRUBS	138
TOTAL	1312*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.4 HA/AUM (0.3 AUM/AC)

DMC2. Aw/Rose/Tall forb

(Populus tremuloides/Rosa acicularis/Tall forbs)

n=71 This community type is part of the low bush cranberry ecosite outlined by Beckingham and Archibald (1996). This community type is also very similar to the Aspen/Rose/Low forb community type, but the cover of forbs is much higher. This appears to be related to the grazing pressure. The higher the grazing pressure on the Aw/Rose/Tall forb community type appears to cause a reduction in the cover of tall growing forbs (wild sarsaparilla, fireweed, peavine, showy aster) and favours the growth of low growing forbs (bunchberry, dewberry, wintergreen, strawberry). This community type is providing a moderate amount of forage for domestic livestock and would be considered primary range on a forested disposition.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	51	15-70	100
BALSAM POPLAR *(Populus balsamifera)*	4	0-10	58
SHRUBS			
HAZELNUT *(Corylus cornuta)*	2	0-12	34
WILD RED RASPBERRY *(Rubus idaeus)*	4	0-10	83
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	2	0-32	45
PRICKLY ROSE *(Rosa acicularis)*	12	0-24	91
LOW BUSH CRANBERRY *(Viburnum edule)*	5	0-36	76
FORBS			
FIREWEED *(Epilobium angustifolium)*	3	0-7	61
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	4	0-7	87
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	2	0-10	78
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-4	87
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-4	76
YELLOW PEAVINE *(Lathyrus ochroleucus)*	7	0-27	96
WILD SARSAPARILLA *(Aralia nudicaulis)*	11	0-57	79
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	5	0-65	93
HAIRY WILDRYE *(Elymus innovatus)*	3	0-30	70

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MEDIUM TO RICH
ELEVATION:
455-606(496) M
PERCENT SLOPE GRADIENT:
0 - 25(5)
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	169(0-444)
FORBS	507(72-988)
SHRUBS	282(118-378)
TOTAL	958(624-1810)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.9 HA/AUM (0.2 AUM/AC)

DMC3. Aw/Rose/Low forb

(Populus tremuloides/Rosa acicularis/Low forbs)

n=60 This community type is part of the low bush cranberry ecosite described by Beckingham and Archibald (1996) and is very similar to the Aw/Rose/Tall forb community type previously described. The difference in the community types appears to be related to the grazing pressure. The higher the grazing pressure on the Aw/Rose/Tall forb community type appears to cause a reduction in the cover of tall growing forbs (wild sarsaparilla, fireweed, peavine, showy aster) and favours the growth of low growing forbs (bunchberry, dewberry, wintergreen, strawberry). This community type is providing a moderate amount of forage for domestic livestock and would be considered primary range on a forested disposition.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	46	15-85	100
BALSAM POPLAR *(Populus balsamifera)*	3	0-15	33
SHRUBS			
WILLOW SPP. *(Salix spp.)*	2	0-20	36
SASKATOON *(Amelanchier alnifolia)*	1	0-11	48
WILD RED RASPBERRY *(Rubus idaeus)*	5	0-20	93
SNOWBERRY *(Symphoricarpos occidentalis)*	4	0-38	85
PRICKLY ROSE *(Rosa acicularis)*	13	1-55	100
FORBS			
FIREWEED *(Epilobium angustifolium)*	1	0-11	42
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	3	0-30	78
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	1	0-30	53
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-12	92
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-12	82
BUNCHBERRY *(Cornus canadensis)*	5	0-22	83
WILD SARSAPARILLA *(Aralia nudicaulis)*	1	0-9	38
WINTERGREEN *(Pyrola asarifolia)*	3	0-20	85
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	0-20	77
SLENDER WHEATGRASS *(Agropyron trachycaulum)*	2	0-40	33
HAIRY WILDRYE *(Elymus innovatus)*	3	0-22	73

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MEDIUM TO RICH
ELEVATION:
455-697(524) M
PERCENT SLOPE GRADIENT:
0 - 5
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	285(12-996)
FORBS	339(90-842)
SHRUBS	300(0-896)
TOTAL	937(414-2074)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

DMC3a. Aw-Pb/Dandelion/Kentucky bluegrass

(Populus tremuloides-P. balsamifera/Taraxacum officinale/Poa pratensis)

n=6 This community represents the Aw or Pb/Rose/Tall forb community that has recieved prolonged heavy grazing. This community type often occurs in relatively small isolated patches created by intensive grazing adjacent to water, salt or temporary holding areas. The species richness and diversity of native shrubs, forbs, and grass is reduced and replaced by grazing resistant clover, dandelion and Kentucky bluegrass.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	36	20-50	100
BALSAM POPLAR *(Populus balsamifera)*	32	20-40	100
SHRUBS			
WILLOW SPP. *(Salix spp.)*	2	1-3	100
WILD RED RASPBERRY *(Rubus idaeus)*	4	0-10	80
SNOWBERRY *(Symphoricarpos occidentalis)*	7	0-20	80
PRICKLY ROSE *(Rosa acicularis)*	15	3-30	100
FORBS			
CLOVER *(Trifolium spp.)*	10	0-20	80
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	2	0-10	83
DANDELION *(Taraxacum officinale)*	4	1-10	100
WILD STRAWBERRY *(Fragaria virginiana)*	3	1-3	100
SHOWY ASTER *(Aster conspicuus)*	4	3-10	100
BUNCHBERRY *(Cornus canadensis)*	1	0-1	50
WILD SARSAPARILLA *(Aralia nudicaulis)*	1	0-1	20
WINTERGREEN (*Pyrola asarifolia*)	2	0-10	33
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	1	0-3	67
KENTUCKY BLUEGRASS (*Poa pratensis)*	4	0-10	83
HAIRY WILDRYE (*Elymus innovatus*)	2	0-10	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC
ELEVATION:
455-697(524) M
PERCENT SLOPE GRADIENT:
0 - 5
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	681
FORBS	380
SHRUBS	117
TOTAL	1178*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.5 HA/AUM (0.25 AUM/AC)

DMC4. Aw-Pb/Hazelnut

(Populus tremuloides-P. balsamifera/Corylus cornuta)

n=45 Beaked hazelnut is a common component of many of the deciduous stands in both the western and eastern ecodistricts of the Dry Mixedwood subregion. The presence of hazelnut appears to be indicative of warmer sites and have some fire history (Downing and Karpuk 1992). This community tends to occur on moderately to well drained, fine-textured and gently sloping till deposits. The total forage productivity of this community type is only moderate, but the majority of the production is coming from hazelnut, which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock, limiting the forage availability. This community type would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	38	3-75	100
BALSAM POPLAR *(Populus balsamifera)*	5	0-60	38
PAPER BIRCH (*Betula papyrifera*)	2	0-70	4
SHRUBS			
HAZELNUT *(Corylus cornuta)*	39	12-70	100
PRICKLY ROSE *(Rosa acicularis)*	9	0-25	82
SNOWBERRY (*Symphoricarpos occidentalis,albus*)	4	4-10	100
SASKATOON (*Amelanchier alnifolia*)	4	0-18	89
LOW BUSH CRANBERRY (*Viburnum edule*)	3	0-16	71
FORBS			
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-7	80
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	4	0-5	87
PEAVINE *(Lathyrus ochroleucus)*	5	1-10	100
AMERICAN VETCH *(Vicia americana)*	1	0-2	67
BUNCHBERRY *(Cornus canadensis)*	6	0-8	84
WILD SARSAPARILLA *(Aralia nudicaulis)*	11	0-25	93
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	4	0-10	87

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MEDIUM TO RICH

ELEVATION:
455 M

PERCENT SLOPE GRADIENT:
0-15 %

SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	77(2-200)
FORBS	457(398-520)
SHRUBS	441(348-522)
TOTAL	995(830-1180)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.8 HA/AUM (0.2 AUM/AC)

DMC5. Aw/Buffaloberry

(Populus tremuloides/ Shepherdia canadensis)

n=5 This community type was found on mesic sites at higher elevations in the Saddle and Birch hills. Beckingham (1993) felt the Aw/Buffaloberry type was slightly drier and had a slightly poorer nutrient regime than the modal Aw/Rose community types. This type is providing a moderate amount of forage for domestic livestock, but the drier site conditions and poorer nutrient status will limit regrowth after grazing. Buffaloberry the predominant shrub species in this community type, is generally unpalatable to livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	52	30-85	100
SHRUBS			
BUFFALOBERRY *(Shepherdia canadensis)*	25	11-38	100
WILD RED RASPBERRY *(Rubus idaeus)*	3	0-8	60
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	1	0-2	20
PRICKLY ROSE *(Rosa acicularis)*	8	2-17	100
LOW BUSH CRANBERRY *(Viburnum edule)*	3	0-14	40
FORBS			
BUNCHBERRY *(Cornus canadensis)*	8	0-21	80
DEWBERRY OR RUNNING RASPBERY *(Rubus pubescens)*	2	0-9	60
YELLOW PEAVINE *(Lathyrus ochroleucus)*	8	1-18	100
TWINFLOWER *(Linnaea borealis)*	3	0-8	60
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	1-7	80
HAIRY WILDRYE *(Elymus innovatus)*	5	1-15	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MEDIUM

ELEVATION:
455-758(556) M

PERCENT SLOPE GRADIENT:
0-15

SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	19(12-26)
FORBS	658(426-986)
SHRUBS	219(0-392)
TOTAL	897(840-1006)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.1 HA/AUM (0.2 AUM/AC)

DMC6. Aw/Alder

(Populus tremuloides/Alnus crispa)

n=7 This community type was described at a higher elevation (600 m) in the Dry Mixedwood subregion. Brierly et al. (1985) and Beckingham (1993) both described aspen-alder communities at higher elevations (>600m). It appears that the presence of alder may indicate a transition from the Dry Mixedwood into the Lower Foothills subregion.

This community type is providing a moderate amount of forage for domestic livestock, but the high cover of alder will limit access. Consequently, this community type should be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR			
(Populus balsamifera)	5	1-10	100
TREMBLING ASPEN			
(Populus tremuloides)	45	25-60	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	7	5-12	100
WILD RED RASPBERRY			
(Rubus idaeus)	2	0-5	67
LOW BUSH CRANBERRY			
(Viburnum edule)	5	2-12	100
GREEN ALDER			
(Alnus crispa)	31	18-82	100
FORBS			
CREAM-COLOURED VETCHLING			
(Lathyrus ochroleucus)	4	0-6	83
BUNCHBERRY			
(Cornus canadensis)	12	0-30	83
STRAWBERRY			
(Fragaria virginiana)	2	1-3	100
WILD SARSAPARILLA			
(Aralia nudicaulis)	20	5-40	100
GRASSES			
MARSH REEDGRASS			
(Calamagrostis canadensis)	21	0-65	83
SLENDER WHEATGRASS			
(Agropyron trachycaulum)	2	0-5	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MEDIUM

ELEVATION:
600 M

PERCENT SLOPE GRADIENT:
5 %

SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	170
FORBS	356
SHRUBS	556
TOTAL	1082

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.7 HA/AUM (0.2 AUM/AC)

DMC7. Aw/Saskatoon

(Populus tremuloides/ Amelanchier alnifolia)

n=9 This community type is found on mesic, well drained south facing slopes that overlook rivers and creeks. Generally, hazelnut, chokecherry, saskatoon and snowberry are indicative of the Dry Mixedwood subregion and are usually found associated with each other. When saskatoon predominates it usually occurs on south and west facing slopes. Saskatoon provides important browse for wild ungulates. Livestock also find saskatoon palatable and in areas where there is extensive cattle grazing this species can be heavily browsed.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	55	35-70	100
BALSAM POPLAR *(Populus balsamifera)*	4	0-20	44
SHRUBS			
SASKATOON *(Amelanchier alnifolia)*	21	15-30	100
PRICKLY ROSE *(Rosa acicularis)*	12	1-31	100
WILD RED RASPBERRY *(Rubus idaeus)*	5	0-17	67
SNOWBERRY *(Symphoricarpos occidentalis)*	5	0-12	89
CHOKECHERRY *(Prunus virginiana)*	7	0-30	67
FORBS			
YELLOW PEAVINE *(Lathyrus ochroleucus)*	2	0-10	78
STRAWBERRY *(Fragaria virginiana)*	1	0-10	78
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	2	0-10	67
WILD SARSAPARILLA *(Arailia nudicaulis)*	6	0-20	89
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	3	1-10	78

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MEDIUM
ELEVATION:
455-630 M
PERCENT SLOPE GRADIENT:
4(3-5%)
ASPECT:
SOUTHERLY-WESTERLY
SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	153(42-264)
FORBS	419(250-587)
SHRUBS	524(514-534)
TOTAL	1096(826-1365)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.7 HA/AUM (0.25 AUM/AC)

DMC8. Pb-Aw/Red osier dogwood

(Populus balsamifera-P. tremuloides/Cornus stolonifera)

n=51 This community type is typical of river floodplains throughout the Dry Mixedwood subregion. This community type tends to have a subhygric moisture and rich nutrient regime. Beckingham and Archibald (1996) found this community type on mid to lower slope topographic positions or near water courses where they recieve nutrient-rich seepage or flood waters for a portion of the growing season. This community type is one of the most productive in the Dry Mixedwood subregion, but the high cover of shrubs limits access to livestock. The high cover of tall growing shrubs (alder, red osier dogwood) also limits the growth of low shrubs, forbs and grass the principle forage species for domestic livestock in deciduous forests. As a result, this community should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR			
(Populus balsamifera)	37	0-80	84
TREMBLING ASPEN			
(Populus tremuloides)	20	0-60	69
PAPER BIRCH			
(Betula papyrifera)	4	0-50	41
SHRUBS			
RED OSIER DOGWOOD			
(Cornus stolonifera)	23	8-70	100
WILD RED RASPBERRY			
(Rubus idaeus)	4	0-18	60
PRICKLY ROSE			
(Rosa acicularis)	9	0-18	78
LOW BUSH CRANBERRY			
(Viburnum edule)	7	0-30	78
FORBS			
HORSETAIL			
(Equisetum arvense)	4	0-10	73
WILD SARSAPARILLA			
(Aralia nudicaulis)	7	0-40	80
PEAVINE			
(Lathyrus ochroleucus)	1	0-4	57
FIREWEED			
(Epilobium angustifolium)	3	0-20	61
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	4	0-50	75

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
RICH
ELEVATION:
455-606 M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	13(0-50)
FORBS	213(150-250)
SHRUBS	713(400-900)
TREE	13(0-50)
TOTAL	950(600-1150)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC8a. Pb-Aw/Willow

(Populus balsamifera-P. tremuloides/Salix spp.)

n=6 This community type is typical of aspen forests adjacent to sloughs and wet meadows. The edges of the sedge meadows tend to be willow dominated. This community type represents the transition from the meadow edge into the aspen and balsam poplar dominated forest. This community type is relatively moist and nutrient rich, but the high cover of willow limits the light reaching the forest floor inhibiting the growth of understory shrub, forbs and grass. As a result there is little forage for domestic livestock. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR			
(Populus balsamifera)	25	0-60	83
TREMBLING ASPEN			
(Populus tremuloides)	16	0-50	67
PAPER BIRCH			
(*Betula papyrifera*)	7	0-20	50
SHRUBS			
WILLOW SPP.			
(Salix spp.)	27	20-35	100
WILD RED RASPBERRY			
(Rubus idaeus)	8	0-20	83
PRICKLY ROSE			
(Rosa acicularis)	3	1-10	100
BRACTED HONEYSUCKLE			
(*Lonicera involcrata*)	2	0-3	83
FORBS			
STRAWBERRY			
(Fragaria virginiana)	3	1-5	100
LINDLEY'S ASTER			
(Aster ciliolatus)	1	0-5	33
TALL LUNGWORT			
(Mertensia paniculata)	4	1-20	100
DEWBERRY			
(Rubus pubescens)	2	1-4	100
HORSETAIL			
(*Equisetum arvense*)	3	0-10	83
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	5	1-20	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
RICH
ELEVATION:
455-606 M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	130(0-260)
FORBS	525(350-700)
SHRUBS	155(50-260)
TREE	75(0-150)
TOTAL	885(660-1110)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC9. Pb-Aw/Horsetail

(Populus balsamifera-Populus tremuloides/Equisetum arvense)

n=5 This community occupies lowland sites adjacent to black spruce and willow lowlands. It is very moist and nutrient-rich. Horsetail types in the other subregions also tend to be moister and richer than the modal Aw/Rose types. Past overgrazing pressure appears to have been heavy at one of the sites has resulted in an alteration of understory species composition and productivity. Overuse appears to lower species diversity and allows horsetail to increase in cover.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	25	0-85	60
BALSAM POPLAR *(Populus balsamifera)*	41	0-75	80
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	3	1-10	100
HONEYSUCKLE *(Lonicera involcrata)*	3	0-16	60
RED OSIER DOGWOOD *(Cornus stolonifera)*	3	0-8	60
FORBS			
HORSETAIL *(Equisetum arvense)*	30	5-60	100
BUNCHBERRY *(Cornus canadensis)*	1	0-6	40
TALL LUNGWORT *(Mertensia paniculata)*	3	0-7	60
DEWBERRY *(Rubus pubescens)*	1	0-5	80
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-4	20
BISHOP'S CAP *(Mitella nuda)*	1	0-3	40
STRAWBERRY *(Fragaria virginiana)*	1	0-2	60
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	0-5	80

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
HYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
590-667 M

SOIL DRAINAGE:
IMPERFECTLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	188(104-272)
FORBS	544(450-638)
SHRUBS	302(0-604)
TOTAL	1034(910-1158)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC10. Deciduous cutblocks and unseeded clearings

(Populus tremuloides)

n=4 This community type represents deciduous cutblocks and clearings that have not been seeded to tame forage species. Marsh reedgrass and strawberry initially dominated these areas. As succession occurs an understory of aspen and rose predominate. As the tree cover increases the understory species structure and diversity declines. Initially these clearings are very productive for domestic livestock until the trees grow back and limit accessiblity. Care should be taken when grazing these cutblocks that the trees are not damaged and there is sufficient regrowth to regenerate the cutblock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
UNDERSTORY TREES			
BALSAM POPLAR *(Populus balsamifera)*	T	0-1	25
ASPEN *(Populus tremuloides)*	19	11-28	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	18	9-22	100
LOW BUSH CRANBERRY *(Viburnum edule)*	2	0-4	75
SNOWBERRY OR BUCKBRUSH *(Symphoricarpos occidentalis)*	3	0-11	75
WILD RED RASPBERRY *(Rubus idaeus)*	5	0-16	50
FORBS			
WILD STRAWBERRY *(Fragaria virginiana)*	22	8-38	100
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	2	0-6	25
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	2	0-8	50
NORTHERN BEDSTRAW *(Galium boreale)*	4	0-14	75
LINDLEY'S ASTER *(Aster ciliolatus)*	4	0-12	75
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	17	0-45	75

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
455-727(636) M

PERCENT SLOPE GRADIENT:
LEVEL

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	623
FORBS	580
SHRUBS	810
TOTAL	2013

ECOLOGICALLY SUSTAINABLE STOCKING RATE

2.0 HA/AUM (0.2 AUM/AC)

DMC11. Pb/Honeysuckle

(Populus balsamifera/Lonicera involcrata)

n=8 This community type occupies mid to lower slope positions which receive nutrient rich seepage from upslope. It has similar moisture and nutrient regimes to the red osier dogwood dominated sites, but it has a very low cover of red osier dogwood which distinguishes this community type from the red osier dogwood dominated communities. The lack of red osier dogwood cover may be indicative of increased grazing pressure or this community may represent the transition to the Lower Foothills subregion. Indeed Lane et al. (2000) described an Aw/Honeysuckle in the Lower Foothills subregion and red osier dogwood was not as common in this subregion. This community type has a very diverse shrub and forb layer, but the high cover of shrubs often restricts access to livestock, limiting forage availability. This community type should be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR *(Populus balsamifera)*	53	20-70	100
ASPEN (*Populus tremuloides*)	8	0-20	75
SHRUBS			
LOW BUSH CRANBERRY (*Viburnum edule)*	4	0-20	63
PRICKLY ROSE *(Rosa acicularis)*	11	0-20	88
BRACTED HONEYSUCKLE (*Lonicera involucrata*)	9	3-10	100
RASPBERRY (*Rubus idaeus*)	11	3-40	100
FORBS			
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	3	0-10	88
BUNCHBERRY *(Cornus canadensis)*	4	0-20	88
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-10	88
SHOWY ASTER *(Aster conspicuus)*	3	1-10	100
TALL LUNGWORT (*Mertensia paniculata*)	2	0-5	88
YELLOW PEAVINE (*Lathyrus ochroleucus*)	1	0-3	88
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	1-3	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
RICH
ELEVATION:
590--648(630) M
PERCENT SLOPE GRADIENT:
0
SOIL DRAINAGE:
MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	324
FORBS	687
SHRUBS	200
TOTAL	1211 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE

1.5 HA/AUM (0.3 AUM/AC)

DMC12. Pb/River alder

(Populus balsamifera/Alnus tenuifolia)

n=2 This community is found on lower slopes along natural drainages or areas with high water tables. River alder persists on moist sites and is replaced by green alder on drier upper slope positions. This community is similar to the Pb-Aw/River alder community described by Beckingham and Archibald (1996) in the Boreal Mixedwood of Northern Alberta and is part of the dogwood ecosite. Production of this community type is very high because of the high moisture and nutrient conditions, however a large component of the total forage production is coming from alder which is generally unpalatable to livestock. This community should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR			
(Populus balsamifera)	50	50-60	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	5	1-10	100
RIVER ALDER			
(Alnus tenuifolia)	55	50-60	100
RED OSIER DOGWOOD			
(Cornus stolonifera)	12	3-20	100
FORBS			
HORSETAIL			
(Equisetum arvense)	5	1-10	100
DANDELION			
(Taraxacum officinale)	2	1-3	100
STAR FLOWERED SOLOMON SEAL			
(Smilacina stellata)	1	1-2	100
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	1	0-1	50
HAIRY WILDRYE			
(Elymus innovatus)	1	0-1	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
556-646(587) M

PERCENT SLOPE GRADIENT:
1-5(3)%

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	245
FORBS	544
SHRUBS	397
TOTAL	1187 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC13. Pb-Aw/Silverberry

(Populus balsamifera-P. tremuloides/Elaeagnus commutata)

n=3 This community is scattered throughout the Dry Mixedwood subregion. It appears to represent the invasion of aspen and balsam poplar onto silverberry shrublands. Silverberry thickets can occur on alluvial floodplain terraces, in V-shaped ravines and swale-like depressions where overland flows provide additional moisture (Thompson and Hansen 2002). The open nature and high productivity on these silverberry dominated communities make them attractive to livestock grazing. The understory of these communities are often dominated by Kentucky bluegrass, smooth brome and dandelion. Thompson and Hansen (2002) felt that silverberry dominated communities represented a grazing disclimax of red osier dogwood communities in Southern Alberta. This community should be rated as secondary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	17	0-50	33
BALSAM POPLAR (*Populus balsamifera*)	31	3-50	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	11	3-20	100
YELLOW WILLOW *(Salix lutea)*	4	1-10	100
SILVERBERRY (*Elaeagnus commutata)*	23	20-30	100
FORBS			
DANDELION *(Taraxacum officinale)*	2	1-3	100
SHOWY ASTER *(Aster conspicuus)*	1	1-3	100
HORSETAIL *(Equisetum arvense)*	4	0-10	66
STRAWBERRY *(Fragaria virginiana)*	4	0-10	66
YELLOW PEAVINE (*Lathyrus ochroleucus*)	1	1-2	100
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	5	1-10	100
SMOOTH BROME *(Bromus inermis)*	4	0-10	66

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
570-690(630) M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	200
FORBS	300
SHRUBS	600
TOTAL	1100 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.5 HA/AUM (0.3 AUM/AC)

DMC14. Pb/Snowberry

(Populus balsamifera/Symphoricarpos occidentalis)

n=3 This community type occupies small seepage areas on slopes above creeks and rivers in the Dry Mixedwood subregion. Snowberry prefers well drained habitats and has been found to quite common on forested slopes and river flood plains throughout the Boreal forest (Lane et al. 2000). The presence of balsam poplar indicates that the moisture content is sufficient to support its growth in this community. This community type is usually found in only small isolated spots. Consequently it will contribute little to the overall carrying capacity of a lease.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN (*Populus tremuloides)*	5	0-11	66
BALSAM POPLAR *(Populus balsamifera*)	36	3-80	100
SHRUBS			
PRICKLY ROSE (*Rosa acicularis)*	17	10-20	100
SNOWBERRY *(Symphoricarpos occidentalis)*	22	6-20	100
RED OSIER DOGWOOD (*Cornus stolonifera*)	5	1-10	100
FORBS			
BUNCHBERRY *(Cornus canadensis)*	3	0-6	66
STRAWBERRY *(Fragaria virginiana)*	2	1-3	100
NORTHERN BEDSTRAW *(Galium boreale)*	1	1-2	100
DANDELION (*Taraxacum officinale*)	2	0-3	66
YELLOW PEAVINE (*Lathyrus ochroleucus*)	6	3-15	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	1	0-1	66
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-10	33

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
556-709(624) M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	18
FORBS	230
SHRUBS	896
TOTAL	1204 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.5 HA/AUM (0.3 AUM/AC)

DMC15. Pb/Reedgrass

(Populus balsamifera/Calamagrostis stricta)

n=2 This community type is not common in the Dry Mixedwood subregion. It appears to represent the invasion of balsam poplar onto reedgrass and reed canary grass dominated meadows. As sloughs and small lakes dry up the edge communities become drier which favours the growth of trees and shrubs. If drying continues this community will likely succeed to a Pb/Red osier dogwood dominated community type. However, if flooding increases balsam poplar will likely decline. This community type is very productive for domestic livestock and the open nature of the understory also allows for good access. This community should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR *(Populus balsamifera)*	40	20-60	100
SHRUBS			
RED OSIER DOGWOOD *(Cornus stolonifera)*	2	1-3	100
FORBS			
THISTLE *(Cirsium arvense)*	3	3-4	100
HORSETAIL *(Equisetum arvense)*	3	3-4	100
SOW THISTLE *(Sonchus arvensis)*	7	3-10	100
DANDELION *(Taraxacum officinale)*	2	0-3	50
GRASSES			
NARROW REED GRASS *(Calamagrostis stricta)*	10	0-20	50
REED CANARY GRASS *(Phalaris arundinacea)*	5	0-10	50
WATER SEDGE *(Carex aquatilis)*	5	0-10	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC TO SUBHYDRIC

NUTRIENT REGIME:
RICH

ELEVATION:
556-693(617) M

SOIL DRAINAGE:
MODERATELY WELL TO IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2000
FORBS	100
SHRUBS	50
TOTAL	2150 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

DMC16. Bw/Labrador tea

(Betula papyrifera/Ledum groenlandicum)

n=1 This community type represents a treed poor fen ecosite that was recently burned in Elk Island National Park. The poor fen ecosite is intermediate in nutrient regime between the bog and the rich fen ecosites (Beckingham and Archibald 1996). The presence of Labrador tea and short sedge is indicative of the acidic soil conditions. Treed poor fens are often dominated by black spruce in the Boreal Mixedwood (Beckingham and Archibald 1996), however the frequent fire regime in the park has burned the black spruce canopy and the site has become dominated by paper birch a early successional species in these boggy areas. These boggy community types are often too wet for domestic livestock and the species growing in them are often unpalatable. This community should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
PAPER BIRCH *(Betula papyrifera)*	40	-	100
ASPEN *(Populus tremuloides)*	1	-	100
SHRUBS			
LABRADOR TEA *(Ledum groenlandicum)*	40	-	100
CURRANT *(Ribes triste)*	30	-	100
RASPBERRY *(Rubus idaeus)*	3	-	100
BLUEBERRY *(Vaccinium myrtilloides)*	20	-	100
FORBS			
FIREWEED *(Epilobium angustifolium)*	1	-	100
SKULL CAP *(Scutellaria galericulata)*	1	-	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	3	-	100
SHORT SEDGE *(Carex curta)*	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC

NUTRIENT REGIME:
POOR

ELEVATION:
625 M

SOIL DRAINAGE:
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	150
FORBS	250
SHRUBS	350
TOTAL	750 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC17. Bw/Raspberry

(Betula papyrifera/Rubus idaeus)

n=2 This community type was described adjacent to old beaver dams. Cutting of the adjacent tree canopy and the increased moisture around the dam favours the growth of paper birch and raspberry. Both species are early successional and will rapidly dominate a site after disturbance. As the site drys and undergoes succession it will likely succeed to willow and eventually balsam poplar and white spruce. This community occupies small areas adjacent to the ponds and sloughs and is generally too wet for livestock. It should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
PAPER BIRCH			
(Betula papyrifera)	85	80-90	100
ASPEN			
(*Populus tremuloides*)	1	0-1	50
SHRUBS			
ROSE			
(Rosa acicularis)	1	0-1	50
SCOULER'S WILLOW			
(Salix scouleriana)	5	0-10	50
RASPBERRY			
(*Rubus ideaus*)	10	10-11	100
FORBS			
FIREWEED			
(Epilobium angustifolium)	1	0-1	50
BUNCHBERRY			
(Cornus cornuta) 2	0-3	50	
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	15	1-30	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC

NUTRIENT REGIME:
RICH

ELEVATION:
625 M

SOIL DRAINAGE:
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	300
FORBS	300
SHRUBS	400
TOTAL	1000 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMC18. Pb-Bw/Kentucky bluegrass

(Populus balsamifera-Betula papyrifera/Poa pratensis)

n=5 This community represents a Pb or Bw/Red osier dogwood community that has recieved prolonged heavy grazing. This community type often occurs in relatively small isolated patches created by intensive grazing adjacent to water, salt or temporary holding areas. The species richness and diversity of native shrubs, forbs, and grass is reduced and replaced by grazing resistant species like clover, dandelion and Kentucky bluegrass.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	4	0-10	80
BALSAM POPLAR *(Populus balsamifera)*	54	30-80	100
PAPER BIRCH (*Betula papyrifera*)	8	0-40	60
SHRUBS			
WILLOW SPP. *(Salix spp.)*	3	3-4	100
WILD RED RASPBERRY *(Rubus idaeus)*	4	0-10	80
SNOWBERRY *(Symphoricarpos occidentalis)*	3	1-10	100
PRICKLY ROSE *(Rosa acicularis)*	6	3-10	100
FORBS			
FIREWEED *(Epilobium angustifolium)*	1	0-1	60
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	4	0-20	80
CLOVER *(Trifolium spp.)*	2	0-10	60
WILD STRAWBERRY *(Fragaria virginiana)*	3	1-3	100
SHOWY ASTER *(Aster conspicuus)*	2	1-3	100
Horsetail *(Equisetum arvense)*	2	1-3	100
DANDELION *(Taraxacum officinale)*	4	1-10	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	1	0-3	80
KENTUCKY BLUEGRASS (*Poa pratensis)*	9	1-20	100
QUACKGRASS (*Agropyron repens*)	1	0-3	60

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
RICH
ELEVATION:
455-697(524) M
PERCENT SLOPE GRADIENT:
0 - 5
SOIL DRAINAGE:
MODERATELY WELL
RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	700
FORBS	300
SHRUBS	150
TOTAL	1150 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

DMC19. Pb/Smooth brome

(Populus balsamifera/Bromus inermis)

n=2 This community type is similar to the previously described red osier dogwood dominated balsam poplar dominated community types, but has a high cover of smooth brome in the understory. Smooth brome is an introduced grass that can increase with increased grazing pressure, but smooth brome is also highly invasive and can invade into ungrazed areas. The invasion of non-native invaders onto the site makes this community moderately productive for domestic livestock. .

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR			
(Populus balsamifera)	70	60-80	100
SHRUBS			
WILLOW SPP.			
(Salix spp.)	67	3-10	100
WILD RED RASPBERRY			
(Rubus idaeus)	10	0-20	50
SNOWBERRY			
(Symphoricarpos occidentalis)	7	3-10	100
RED OSIER DOGWOOD			
(Cornus stolonifera)	10	1-20	100
FORBS			
CLOVER			
(Trifolium spp.)	1	0-1	50
HORSETAIL			
(Equisetum arvense)	5	1-10	100
DANDELION			
(Taraxacum officinale)	2	1-3	100
STAR FLOWERED SOLOMON SEAL			
(Smilacina stellata)	7	3-10	100
SHOWY ASTER			
(Aster conspicuus)	2	1-3	100
RICHARDSON GERANIUM			
(Geranium richardsonii)	10	0-20	50
HEMP-NETTLE			
(Galeopsis tetrahit)	5	0-10	50
GRASSES			
SMOOTH BROME			
(Bromus inermis)	10	1-20	100
KENTUCKY BLUEGRASS			
(Poa pratensis)	5	0-10	50
QUACKGRASS			
(Agropyron repens)	2	0-3	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
RICH
ELEVATION:
455-697(524) M
PERCENT SLOPE GRADIENT:
0 - 5
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	900
FORBS	300
SHRUBS	50
TOTAL	1250 *ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

DRY MIXEDWOOD SUBREGION

CONIFEROUS AND MIXEDWOOD FOREST COMMUNITIES

Photo 6. Pj/Bearberry community type in the Dry Mixedwood subregion

DM-CONIFEROUS AND MIXEDWOOD FORESTS

The mixedwood and coniferous community types described in this guide represent seven ecological sites (ecosites) as described by Beckingham and Archibald (1996). On sites with subxeric moisture and poor nutrient regimes, coarse textured, sandy soils open stands of jack pine generally dominate (Pj/Alder, Pj/Bearberry). These community types commonly have a carpet of lichens covering the forest floor and a thin organic layer typically less than 5 cm thick (Beckingham and Archibald 1996).

On slightly moister sites with submesic moisture and medium nutrient regimes aspen grows in conjunction with jack pine to form the Pj-Aw/Bearberry community type. On slightly moister sites Aw-Sw/Bearberry and Sw/Buffaloberry/Bearberry communities are found. The soils of these community types continue to be coarse-textured but the moisture and nutrient conditions are more favourable to the growth of aspen and spruce.

The mesic/medium sites are generally dominated by white spruce (Sw/Moss) and mixedwood communities of aspen and spruce (Aw-Sw/Rose/Marsh reedgrass, Aw-Pb-Sw/Willow/Wild sarsparilla, Sw-Pb-Aw/Rose/Twinflower, Sw-Aw/Low bush cranberry). These communities represent the reference ecological site for the Boreal Mixedwood subregion (Beckingham and Archibald 1996). Generally, these sites have moderately fine to fine-textured till or glaciolacustrine parent materials. Pioneer deciduous species (aspen, balsam poplar and birch) are replaced with white spruce and balsam fir as these sites develop successionally. With succession shade tolerant plants take over the herbaceous layer as conifers dominate the canopy. These shade tolerant species are unproductive and often unpalatable for domestic livestock. Forage productivity declines from 2.3 ha/AUM in a deciduous community to 2.3-8.6 ha/AUM in a mixedwood community to less than 10 ha/AUM in a conifer community.

Black spruce and larch communites generally dominate on wetter sites with subhygric to subhydric moisture regimes and poor to medium nutrient regimes to form the Sb/Willow/Moss and Sb-Lt/Labrador tea/Moss community types. Larch is more tolerant of excessive moisture and is indicative of an enriched nutrient status, while black spruce is typical in areas of stagnating ground water with poor nutrient status (Hay et al. 1985). Generally, these community types are considered non-use for domestic livestock. In contrast on the richer sites red osier dogwood and horsetail dominate the understory to form the Sw/Horsetail and Sw-Pb/Red osier dogwood dominated communities.

Beckingham and Archibald (1996), provide a good description on how the conifer and mixedwood community types are arranged in the landscape.

Table 5. Production (kg/ha) and grazing capacity (ha/AUM) for ecological site phase, conifer and mixedwood communities of the Dry Mixedwood subregion

Ecological site	Community number	Community type	Productivity (kg/ha)				Sustainable Stocking rate 'ha/AUM' (Aum/ac)
			Grass	Forb	Shrub	Total	
a subxeric/poor	**Ecological site phase**	**a lichen**	**160**	**175**	**191**	**526**	**Non-use**
	DMD1	Pj/Alder	160	175	191	526	Non use
b submesic/medium	**Ecological site phase**	**b1 blueberry Pj-Aw**	**141**	**325**	**110**	**577**	**3.1 (0.1)**
	DMD2	Pj-Aw/Bearberry	141	325	110	577	3.1(0.1)
	Ecological site phase	**b3 blueberry Aw-Sw**	**100**	**50**	**500**	**650**	**Non-use**
	DMD2a	Aw-Sw/Bearberry	100	50	500	650	Non-use
	Ecological site phase	**b4 blueberry Sw**	**18**	**238**	**848**	**1104**	**Non-use**
	DMD3	Sw/Buffaloberry/Bearberry	18	238	848	1104	Non use
d mesic/medium	**Ecological site phase**	**d2 low-bush cranberry Aw-Sw**	**434**	**392**	**470**	**1296**	**1.4 (0.3)**
	DMD5	Aw-Sw/Rose/Marsh reedgrass	468	534	440	1442	1.3(0.3)
	DMD10	Sw-Aw/Low bush cranberry	*400*	*250*	*500*	*1150*	*1.6* (0.25)

	Ecological site phase	**d3 grazed low-bush cranberry**	***400***	***250***	***200***	***850***	***2.1(0.2)***
	DMD12	Sw-Bw/Raspberry	*400*	*250*	*200*	*850*	*2.1*(0.2)
	Ecological site phase	**d3 low-bush cranberry Sw**	**9**	**115**	**94**	**217**	**Non-use**
	DMD4	Sw/Beaked hazelnut/Moss	0	132	74	206	Non use
	DMD7	Sw-Pb-Aw/Rose/Twinflower	16	112	108	236	Non use
	DMD11	Sw/Moss	*10*	*100*	*100*	*210*	Non use
e subhygric/rich	**Ecological site phase**	**e2 dogwood Pb-Sw**	**20**	**375**	**153**	**548**	**Non-use**
	DMD6	Aw-Pb-Sw/Willow/Wild sarsaparilla	20	400	56	476	Non use
	DMD13	Sw-Pb/Red osier dogwood	*20*	*350*	*250*	*620*	Non use
f hygric/rich	**Ecological site phase**	**f2 horsetail Sw**	***10***	***300***	***250***	***560***	**Non-use**
	DMD14	Sw/Horsetail	*10*	*300*	*250*	*560*	Non use
i subhydric/very poor	**Ecological site phase**	**i1 treed bog**	**10**	**40**	**50**	**100**	**Non-use**
	DMD9	Sb-Lt/Labrador tea/Moss	10	40	50	100	Non-use
j subhydric/medium	**Ecological site phase**	**j1 treed poor fen**	**401**	**89**	**242**	**732**	**Non-use**
	DMD8	Sb/Wllow/Moss	401	89	242	732	Non-use

Note: production in italics is an estimate.

Conifer and Mixedwood Types - Dry Mixedwood

1. Wet, boggy sites dominated by black spruce..........2
   Moist, mesic or dry sandy sites dominated by spruce, aspen, balsam poplar or jackpine... .3
2. Richer nutrient sites with willow and sedge
   dominating understory..........**Sb/Willow/Moss (DMD8)**
   Poorer sites with Labrador tea and larch present..........**Sb-Lt/Labrador Tea/Moss (DMD9)**
3. Mesic or subhygric sites dominated by spruce, aspen, balsam poplar..........4
   Dry, sandy sites dominated by jack pine..........9
4. Mixedwood types dominated by a mixture of conifer and deciduous trees..........5
   White spruce dominated types..........8
5. Dry and mesic sites dominated by Aw-Sw mixedwoods 6
   Balsam poplar present, moister, richer sites..........7
6. Typical mesic site, with rose and marsh
   reedgrass..........**Aw-Sw/Rose/Marsh Reedgrass (DMD5)**
   Drier sites dominated by bearberry ....**Aw-Sw/Bearberry (DMD2a)**
7. Willow, wild sarsaparilla, red osier dogwood or horsetail dominate understory..........13
   Twinflower dominates understory, poorer
   nutrient sites..........**Sw-Pb-Aw/Rose/Twinflower (DMD7)**
8. Mesic sites dominated by hazelnut, moss, low bush cranberry or raspberry..........10
   Poorer nutrient sites, buffaloberry,
   bearberry dominate understory..........**Sw/Buffaloberry/Bearberry (DM**
9. Bearberry dominates, alder low in cover or absent..........**Pj-Aw/Bearberry (DMD2)**
   Alder dominates understory..........**Pj/Alder (DMD1)**
10. Hazelnut dominates the understory..........**Sw/Hazelnut/Moss (DMD4)**
    Mesic sites dominated by low bush cranberry, moss or raspberry..........11
11. Moss dominates understory, little shrub cover..........**Sw/Moss (DMD11)**
    Raspberry or Low bush cranberry dominate the understory..........12
12. Raspberry dominates understory, disturbed sites......**Sw-Bw/Raspberry (DMD12)**
    Low bush cranberry dominates understory..........**Sw-Aw/Low bush cranberry (DMD10)**
13. Willow dominated understory..........**Sw-Pb-Aw/Willow/Moss (DMD6)**
    Red osier dogwood or horsetail dominates understory..........14
14. Red osier dogwood dominates understory..........**Sw-Pb/Red osier dogwood (DMD13)**
    Horsetail dominates understory..........**Sw/Horsetail (DMD14)**

DMD1. Pj/Alder

(Pinus banksiana/ Alnus crispa)

n=2 This community type is found on dry, rapidly drained, sandy soils with a poor nutrient status. Consequently, production is quite low. Cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the area of forage. This community type would be rated as secondary or non-use range.

PERCENT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
JACK PINE *(Pinus banksiana)*	43	35-50	100
SHRUBS			
GREEN ALDER *(Alnus crispa)*	33	30-35	100
PRICKLY ROSE *(Rosa acicularis)*	9	7-10	100
SASKATOON *(Amelanchier alnifolia)*	5	1-8	100
FORBS			
TWIN-FLOWER *(Linnaea borealis)*	6	0-12	50
BEARBERRY *(Arctostaphylos uva-ursi)*	9	0-18	50
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	0-8	50
STRAWBERRY *Fragaria virginiana)*	2	1-2	100
GRASSES			
SEDGES *(Carex spp.)*	6	1-11	100
HAIRY WILD RYE *(Elymus innovatus)*	3	1-4	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	6	1-10	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBXERIC

NUTRIENT REGIME
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
2 - 8%

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	160
FORBS	175
SHRUBS	191

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD2. Pj-Aw/Bearberry

(Pinus banksiana/Arctostaphylos uva-ursi)

n=4 This community represents a jack pine forest with a secondary canopy of aspen. It is very similar to the Pj/Alder community type, but it is found on slightly moister soils with better nutrient regimes. These conditions favour the growth of aspen. Like the previous community, cattle will utilize these areas due to the easy access, however over-utilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
JACK PINE *(Pinus banksiana)*	45	30-45	100
ASPEN *(Populus tremuloides)*	13	10-20	100
SHRUBS			
SASKATOON *(Amelanchier alnifolia)*	9	1-15	100
PRICKLY ROSE *(Rosa acicularis)*	6	4-8	100
BLUEBERRY *(Vaccinium myrtilloides)*	7	0-2	75
FORBS			
BEARBERRY *(Arctostaphylos uva-ursi)*	15	7-64	100
NORTHERN BEDSTRAW *(Galium boreale)*	2	1-3	100
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	2	1-5	100
CREAM-COLOURED VETCHLING *(Lathyrus ochroleucus)*	7	3-7	100
GRASSES			
HAIRY WILD RYE *(Elymus innovatus)*	10	2-16	100
MOSSES			
MOSS SPP.	2	0-7	25

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
0 - 5

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	141
FORBS	325
SHRUBS	110
TOTAL	577

ECOLOGICALLY SUSTAINABLE STOCKING RATE
3.1 HA/AUM (<0.1 AUM/AC)

DMD2a. Aw-Sw/Bearberry

(Populus tremuloides-Picea glauca/Arctostaphylos uva-ursi)

n=1 This community type was found on a small, sandy hillcrest with a high water table. It is similar to the Sw/Buffaloberry/Bearberry (DMD3) community type, but this community is successionally younger. The majority of productivity is from bearberry which is unpalatable to livestock. Consequently, this community type would be considered non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE (*Picea glauca)*	15	-	100
ASPEN (*Populus tremuloides*)	15	-	100
SHRUBS			
SASKATOON *(Amelanchier alnifolia)*	1	-	100
PRICKLY ROSE (*Rosa acicularis)*	2	-	100
BLUEBERRY *(Vaccinium myrtilloides)*	2	-	100
FORBS			
BEARBERRY *(Arctostaphylos uva-ursi)*	37	-	100
STRAWBERRY *(Fragaria virginiana)*	1	-	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	-	100
WILD-LILY-OF-THE VALLEY (*Maianthemum canadense*)	3	-	100
GRASSES			
HAIRY WILDRYE *(Elymus innovatus)*	3	-	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
0 - 4

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	100
FORBS	50
SHRUBS	500
TOTAL	650

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD3. Sw/Buffaloberry/Bearberry

(Picea glauca/ Shepherdia canadensis/Arctostaphylos uva-ursi)

n=1 This community type represents a very open spruce forest. It was found on a small, sandy hillcrest with a high water table. The site may have a high pH and be somewhat nutrient poor as indicated by the abundance of buffaloberry (Beckingham 1993). The majority of productivity is from buffaloberry which is unpalatable to livestock. Consequently, this community type would be considered non-use range.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE (*Picea glauca)*	10	-	100
SHRUBS			
BUFFALOBERRY *(Shepherdia canadensis)*	48	-	100
PRICKLY ROSE *(Rosa acicularis)*	12	-	100
BLUEBERRY *(Vaccinium myrtilloides)*	7	-	100
SNOWBERRY *(Symphoricarpos occidentalis)*	5	-	100
FORBS			
BEARBERRY *(Arctostaphylos uva-ursi)*	19	-	100
TWINFLOWER *(Linnaea borealis)*	12	-	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	8	-	100
TOADFLAX (*Comandra umbellata*)	2	-	100
GRASSES			
MOUNTAIN RICEGRASS (*Oryzopsis asperifolia)*	8	-	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	6	-	100
SEDGE *(Carex spp.)*	5	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
0 - 4

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	18
FORBS	238
SHRUBS	848
TOTAL	1104

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD4. Sw/Beaked hazelnut/Moss

(Picea glauca/Corylus cornuta/ Moss)

n=1 This is a mature white spruce forest which represents the climax or near climax vegetation for the area. The northerly aspect of this community type has probably protected the site from past disturbance by fires and allowed the community to undergo succession. The high canopy of spruce limits the light reaching the forest floor, limiting the growth of grasses and forbs. As a result, the forage productivity of this community type is very low. This community would be considered non-use.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	60	-	100
PAPER BIRCH *(Betula papyrifera)*	5	-	100
SHRUBS			
HAZELNUT *(Corylus cornuta)*	12	-	100
BOG CRANBERRY *(Vaccinium vitis-idaea)*	6	-	100
PRICKLY ROSE *(Rosa acicularis)*	6	-	100
FORBS			
BEARBERRY *(Arctostapylos uva-ursi)*	2	-	100
TWINFLOWER *(Linnaea borealis)*	8	-	100
BASTARD TOADFLAX *(Geocaulon lividum)*	2	-	100
STRAWBERRY *(Fragaria virginiana)*	2	-	100
MOSSES			
MOSS SPP.	73	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MEDIUM

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
5%

ASPECT:
NORTHERLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	0
FORBS	132
SHRUBS	74
TOTAL	206

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD5. Aw-Sw/Rose/Marsh reedgrass

(Populus tremuloides-Picea glauca/Rosa acicularis/Calamagrostis canadensis)

n=1 This community represents a highly productive aspen community that is succeeding to white spruce. The presence of tall forbs wild sarsaparilla and fireweed indicate a high nutrient regime and a light grazing regime. At present this community type has a good level of forage for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE			
(Picea glauca)	55	50-60	100
POPULUS TREMULOIDES			
(Populus tremuloides)	53	35-70	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	13	3-23	100
WILD RED RASPBERRY			
(Rubus idaeus)	8	0-15	50
BRISTLY BLACK CURRANT			
(Ribes lacustre)	5	0-10	50
LOW BUSH CRANBERRY			
(*Viburnum edule*)	8	6-10	100
FORBS			
BUNCHBERRY			
(Cornus canadensis)	4	0-8	50
FIELD HORSETAIL			
(Equisetum arvense)	2	0-3	50
TALL LUNGWORT			
(Mertensia paniculata)	4	1-7	100
WILD SARSAPARILLA			
(*Aralia nudicaulis)*	4	3-4	100
DEWBERRY			
(Rubus pubscens)	3	0-5	50
FIREWEED			
(Epilobium angustifolium)	2	1-3	100
GRASSES			
MARSH REEDGRASS			
(Calamagrostis canadensis)	17	3-30	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC-SUBHYGRIC

NUTRIENT REGIME:
MEDIUM TO RICH

ELEVATION:
455-600(527) M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	468
FORBS	534
SHRUBS	440
TOTAL	1442

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.3 HA/AUM (0.3 AUM/AC)

DMD6. Aw-Pb-Sw/Willow/Wild sarsaparilla

(Populus tremuloides-Populus balsamifera-Picea glauca/Salix spp./Aralia nudicaulis)

n=1 This community type has similar moisture and nutrient conditions to the Aw-Pb and Pb/Red osier dogwood-Rose community types, but this community is successionally more advanced. The abundance of tall shrubs limits the amount of light reaching the forest floor, which limits forage production. As a result, this community type would be considered non-use or marginal secondary range for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	35	-	100
WHITE SPRUCE *(Picea glauca)*	15	-	100
PAPER BIRCH *(Betula papyrifera)*	10	-	100
BALSAM POPLAR *(Populus balsamifera)*	25	-	100
SHRUBS			
GREEN ALDER *(Alnus crispa)*	45	-	100
WILLOW *(Salix spp.)*	25	-	100
LOW BUSH CRANBERRY *(Viburnum edule)*	10	-	100
PRICKLY ROSE *(Rosa acicularis)*	10	-	100
FORBS			
WILD SARSAPARILLA *(Aralia nudicaulis)*	13	-	100
BISHOP'S CAP *(Mitella nuda)*	11	-	100
CANADA VIOLET *(Viola canadensis)*	11	-	100
LADY FERN *(Athyrium filix-femina)*	5	-	100
DEWBERRY *(Rubus pubescens)*	4	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
606 M

SOIL DRAINAGE:
MODERATELY WELL

PERCENT SLOPE GRADIENT:
20%

ASPECT:
EAST
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	20
FORBS	400
SHRUBS	56
TOTAL	476

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD7. Sw-Pb-Aw/Rose/Twinflower

(Picea glauca-Populus balsamifera-Populus tremuloides/ Rosa acicularis/ Linnaea borealis)

n=1 This community is similar to the previous described Aw-Pb-Sw/Willow/Wild sarsaparilla community type but is found on slightly drier sites with a poorer nutrient regime. Succession of this community type will likely be to a White spruce /Moss dominated community type. The thick overstory limits the growth of shrubs, forbs and grass. Consequently, there is little forage for domestic livestock. This community type would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	COSNT.
TREES			
WHITE SPRUCE *(Picea glauca)*	35	-	100
TREMBLING ASPEN *(Populus tremuloides)*	20	-	100
BALSAM POPLAR *(Populus balsamifera)*	30	-	100
SHRUBS			
SNOWBERRY *(Symphoricarpos occidentalis)*	13	-	100
PRICKLY ROSE *(Rosa acicularis)*	18	-	100
BRACTED HONEYSUCKLE *(Lonicera involcrata)*	5	-	100
BUFFALO-BERRY *(Shepherdia canadensis)*	1	-	100
FORBS			
TWIN-FLOWER *(Linnaea borealis)*	22	-	100
BUNCHBERRY *(Cornus canadensis)*	8	-	100
WINTERGREEN *(Pyrola asarifolia)*	6	-	100
DEWBERRY *(Rubus pubscens)*	6	-	100
BISHOP'S CAP *(Mitella nuda)*	3	-	100
MOSSES			
MOSS SPP.	71	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MEDIUM
ELEVATION:
606 M
SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	16
FORBS	112
SHRUBS	108
TOTAL	236

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD8. Sb/Willow/Moss

(Picea mariana/Salix spp./Moss)

n=2 This community type is part of the poor fen ecosite (Beckingham and Archibald 1996) because it has an intermediate nutrient regime between the bog and rich fen ecosites. Drainage on this community type is poor to very poor, but has some movement of water through the site. This community type has a well developed shrub layer and the grass layer consists mainly of marsh reedgrass and sedge species. The productivity of this type is moderate, but the high water table limits access to domestic livestock. This community would be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BLACK SPRUCE *(Picea mariana)*	15	14-16	100
SHRUBS			
WILLOW SPP. *(Salix spp.)*	35	20-50	100
BOG BIRCH *(Betula glandulosa)*	17	8-25	100
FORBS			
STEMLESS RASPBERRY *(Rubus arctica)*	4	2-5	100
HORSETAIL *(Equisetum arvense)*	18	15-20	100
BISHOP'S CAP *(Mitella nuda)*	6	1-10	100
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	10	9-11	100
HAIR-LIKE SEDGE *(Carex capillaris)*	8	5-10	100
MOSSES			
MOSS SPP.	99	99-100	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
MEDIUM
ELEVATION:
606-697(657) M
SOIL DRAINAGE:
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	401
FORBS	89
SHRUBS	242
TOTAL	732

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD9. Sb-Lt/Labrador tea/Moss

(Picea mariana-Larix laricina/Ledum groenlandicum/Moss)

n=3 This community type is very similar to the previously described community type, but the nutrient status is poorer. This community type appears to be related to the bog ecosite described by Beckingham and Archibald (1996). The bog ecosite commonly has organic soils consisting of slowly decomposing peat moss. This community type is considered non-use for livestock, due to the lack of forage and poor accessibility.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
LARCH *(Larix laricina)*	10	1-15	100
BLACK SPRUCE *(Picea mariana)*	30	10-60	100
SHRUBS			
WILLOW SPP. *(Salix spp.)*	21	8-35	100
LABRADOR TEA *(Ledum groenlandicum)*	23	10-35	100
BOG BIRCH *(Betula glandulosa)*	24	0-39	100
FORBS			
DWARF BRAMBLE *(Rubus pedatus)*	8	0-25	66
HORSETAIL *(Equisetum arvense)*	21	0-45	66
DWARF SCOURING RUSH *(Equisetum scirpoides)*	8	0-25	33
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	3	1-4	100
GOLDEN SEDGE *(Carex aurea)*	5	0-15	33
BEAKED SEDGE *(Carex rostrata)*	4	0-7	66
FOWL BLUEGRASS *(Poa palustris)*	1	0-2	33
MOSSES			
MOSS SPP.	95	10-60	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
VERY POOR

ELEVATION:
576-606 M
SOIL DRAINAGE:
POORLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	10
FORBS	40
SHRUBS	50
TOTAL	100

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD10. Sw-Aw/Low bush Cranberry

(Picea glauca-Populus tremuloides/Viburnum edule)

n=5 This community is similar to community DMD5 Aw-Sw, but is successional more advanced. As succession continues in the absence of disturbance on these sites there will be a corresponding drop in forage production. A spruce dominated forest generaily produces about 1/3 of an undisturbed deciduous dominated community type. This community should be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE			
(Picea glauca)	28	20-40	100
POPULUS TREMULOIDES			
(Populus tremuloides)	14	1-30	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	4	3-10	100
WILD RED RASPBERRY			
(Rubus idaeus)	5	0-10	80
RED OSIER DOGWOOD			
(Cornus stolonifera)	9	0-30	80
LOW BUSH CRANBERRY			
(Viburnum edule)	8	1-10	100
FORBS			
BUNCHBERRY			
(Cornus canadensis)	3	0-10	80
FIELD HORSETAIL			
(Equisetum arvense)	1	0-3	60
TALL LUNGWORT			
(Mertensia paniculata)	1	1-3	100
WILD SARSAPARILLA			
(Aralia nudicaulis)	11	0-30	80
DEWBERRY			
(Rubus pubscens)	2	1-3	100
FIREWEED			
(Epilobium angustifolium)	2	0-3	80
GRASSES			
MARSH REEDGRASS			
(Calamagrostis canadensis)	3	0-10	80

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC-SUBHYGRIC

NUTRIENT REGIME:
MEDIUM TO RICH

ELEVATION:
455-600(527) M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	400
FORBS	250
SHRUBS	500
TOTAL	1150*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.6 HA/AUM (0.25 AUM/AC)

DMD11. Sw/Moss

(Picea glauca/Moss spp.)

n=1 This community is similar to community DMD10 Sw-Aw, but is successional more advanced. As succession continues in the absence of disturbance on these sites there will be a corresponding drop in forage production. A spruce dominated forest generally produces about 1/3 of an undisturbed deciduous and mixed wood dominated community types. This community should be rated as non-use.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE			
(Picea glauca)	60	-	100
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	1	-	100
BRACTED HONEYSUCKLE			
(Lonicera involcrata)	3	-	100
RED OSIER DOGWOOD			
(Cornus stolonifera)	3	-	100
LOW BUSH CRANBERRY			
(Viburnum edule)	1	-	100
FORBS			
BUNCHBERRY			
(Cornus canadensis)	1	-	100
FIELD HORSETAIL			
(Equisetum arvense)	3	-	100
TWINFLOWER			
(Linnaea borealis)	10	-	100
DEWBERRY			
(Rubus pubscens)	1	-	100
GRASSES			
PURPLE OATGRASS			
(Schizachne purpurascens)	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC-SUBHYGRIC

NUTRIENT REGIME:
MEDIUM TO RICH

ELEVATION:
600 M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	10
FORBS	100
SHRUBS	100
TOTAL	210*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD12. Sw-Bw/Raspberry

(Picea glauca-Betula papyrifera/Rubus ideaus)

n=1 This community type was described near Astotin Lake in Elk Island National Park. It represents a site that has had historic beaver activity and since has undergone succession to a spruce dominated community. Cutting of the adjacent tree canopy and the increased moisture around the dam favours the growth of paper birch and raspberry. Both species are early successional and will rapidly dominate a site after disturbance. This community occupies small areas adjacent to the ponds and sloughs and therefore will contribute little to the overall carrying capacity of a lease. It should be rated as non-use.

PLANT COMPOSITION

	CANOPY COVER(%) MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	50	-	100
PAPER BIRCH (*Betula papyrifera*)	20	-	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	3	-	100
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	3	-	100
RASPBERRY *(Rubus idaeus)*	40	-	100
LOW BUSH CRANBERRY (*Viburnum edule*)	3	-	100
FORBS			
WILD SARSAPARILLA *(Aralia nudicaulis)*	10	-	100
HEMP NETTLE *(Galeopsis tetrahit)*	10	-	100
FIREWEED *(Epilobium angustifolium)*	3	-	100
SHOWY ASTER *(Aster conspicuus)*	1	-	100
GRASSES			
QUACKGRASS *(Agropyron repens)*	3	-	100
SMOOTH BROME (*Bromus inermis*)	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC-SUBHYGRIC

NUTRIENT REGIME:
MEDIUM

ELEVATION:
600 M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 850*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.1 HA/AUM (0.2 AUM/AC)

DMD13. Sw-Pb/Red osier dogwood

(Picea glauca-Populus balsamifera/Cornus stolonifera)

n=6 This community is similar to community DMC8 Pb-Aw/Red osier dogwood, but is successional more advanced. As succession continues in the absence of disturbance on these sites there will be a corresponding drop in forage production. A spruce dominated forest generally produces about 1/3 of an undisturbed deciduous dominated community type. This community should be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	23	1-40	100
BALSAM POPLAR *(Populus balsamifera)*	30	20-60	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	7	3-20	100
RED OSIER DOGWOOD *(Cornus stolonifera)*	14	3-20	100
RIVER ALDER *(Alnus tenuifolia)*	11	3-30	100
LOW BUSH CRANBERRY *(Viburnum edule)*	2	0-10	67
FORBS			
WILD SARSAPARILLA *(Aralia nudicaulis)*	2	0-10	67
HORSETAIL *(Equisetum arvense)*	3	1-10	100
STAR FLOWERED SOLOMON SEAL *(Smilacina stellata)*	1	1-3	100
BUNCHBERRY *(Cornus canadensis)*	8	0-30	83
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	2	0-3	67
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-10	83
REDTOP *(Agrostis stolonifera)*	6	0-20	83

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
600 M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 620*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

DMD14. Sw/Horsetail

(Picea glauca/Equisetum arvense)

n=5 This community type is wet and nutrient rich. These sites are commonly found on fluvial or glaciolacustrine parent materials where flooding or seepage enhances the substrate nutrient supply. With high water tables, wet soil conditions organic matter tends to accumulate which favours the growth of horsetails. Generally horsetails are unpalatable to livestock and the wet ground conditions limit access. Consequently, this community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	44	20-60	100
BALSAM POPLAR (*Populus balsamifera*)	3	0-10	60
PAPER BIRCH (*Betula papyrifera*)	9	0-40	80
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	3	1-10	100
RED OSIER DOGWOOD *(Cornus stolonifera)*	3	0-10	80
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	1	0-3	80
LOW BUSH CRANBERRY (*Viburnum edule*)	1	0-3	60
FORBS			
DEWBERRY *(Rubus pubescens)*	1	1-3	100
HORSETAIL *(Equisetum arvense)*	32	30-40	100
BISHOP'S CAP *(Mitella nuda)*	1	0-3	80
BUNCHBERRY *(Cornus canadensis)*	3	0-10	80
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	1	0-3	60
NODDING WOOD REED (*Cinna latifolia*)	1	0-3	40

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
HYGRIC

NUTRIENT REGIME:
RICH

ELEVATION:
600 M

SOIL DRAINAGE:
POOR TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 560*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CENTRAL MIXEDWOOD SUBREGION

This subregion is the largest in the province covering over 210,000 km^2 or nearly 32% of the province (Strong and Leggat 1992)(Map 1). Mean annual summer temperatures average 13.5 °C and winter temperatures average -13 °C, which is somewhat colder than the adjacent Dry Mixedwood subregion. Annual precipitation averages 397 mm of precipitation which is wetter than the Dry Mixedwood.

The modal plant communities are vegetated by aspen and balsam poplar with understories composed of a variety of herbs and deciduous shrubs. White spruce and balsam fir are the climatic climax species but are not well represented because of the frequent occurrence of fire. On dry, well drained, coarse-textured soils jack pine dominates and the poorly drained sites are dominated by black spruce, willows and sedge species. These reference communities are very similar to the Dry Mixedwood subregion, but the drier conditions of the Dry Mixedwood favours the formation of a number of native grassland communities, which are not found in the Central Mixedwood. Table 6 outlines the ecological sites, ecological site phases and reference range plant community types in the Central Mixedwood subregion. There are a number of new ecological sites (ecosites) and ecological site phases (ecosite phases) which are not found in the guide "Ecosites of Northern Alberta" (Beckingham and Archibald 1996) and they are outlined here. The new ecosite includes (aa) grass/shrubland and the new ecosite phases include (aa1) plains wormwood, (d4)shrubland, (e4) shrubland, and (j3) grassland poor fen (Table 6). The "Successional communities" or "Harvesting and Fire succession" categories (Table 1 and 6) outline the successional sequence the community type will undergo with increased grazing pressure or with harvesting or fire disturbance. There are a number of ecological site phase tables which summarize these successional communities. These include (d1a) grazed Aw, (d1c) burned Aw, (d3c) burned Sw, and (k2a) grazed willow.

The 55 range plant communities described in the Central Mixedwood subregion are arranged into 4 categories. These include:

Central Mixedwood subregion

CMA. Native grass and shrubland	18 types
CMB. Tame grasslands	7 types
CMC. Deciduous community types	18 types
CMD. Mixedwood and Conifer community types	12 types

The dominant plant species, canopy cover, environmental conditions, forage production and grazing capacity (when available) are outlined for each community type.

Table 6. Ecological sites, ecological site phases and forested and reference range plant communities for the Central Mixedwood subregion (adapted from Beckingham and Archibald 1996)(see Figure 2 for a diagram outlining the Ecological sites in the landscape of the Boreal Mixedwood subregions).

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
aa grass/shrubland (xeric/poor)	aa1 plains wormwood		CMA5. Plains wormwood/Sheep fescue-Sedge	CMA6 Plains wormwood/ Kentucky bluegrass-Sedge	
a lichen (subxeric/poor)	a1 lichen Pj	a1.1 Pj/bearberry/lichen	CMD2 Pj/Bearberry		
		a1.2 Pj/blueberry/lichen			
		a1.3 Pj/green alder/lichen	CMD1 Pj/Alder		
b blueberry (submesic/medium)	b1 blueberry Pj-Aw	b1.1 Pj-Aw/blueberry - bearberry	CMD3 Aw-Pj/Bearberry /Lichen		
		b1.2 Pj-Aw/blueberry - green alder			
		b1.3 Pj-Aw/blueberry - Labrador tea			
	b2 blueberry Aw(Bw)	b2.1 Aw(Bw)/blueberry - bearberry	CMC5 Aw/Blueberry		
		b2.2 Aw(Bw)/blueberry - green alder			
		b2.3 Aw(Bw)/blueberry - Labrador tea			
	b3 blueberry Aw-Sw	b3.1 Aw-Sw/blueberry - bearberry			
		b3.2 Aw-Sw/blueberry - green alder			

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
		b3.3 Aw-Sw/blueberry - Labrador tea			
	b4 blueberry Sw-Pj	b4.1 Sw-Pj/blueberry - bearberry			
		b4.2 Sw-Pj/blueberry - green alder			
c Labrador tea - mesic (mesic/poor)	c1 Labrador tea - mesic Pj-Sb	c1.1 Pj-Sb/Labrador tea/feather moss			
		c1.2 Pj-Sb/green alder/feather moss			
		c1.3 Pj-Sb/feather moss			
d low-bush cranberry (mesic/medium)	d1 low-bush cranberry Aw	d1.1 Aw/Canada buffalo-berry	CMC8a Aw/Buffaloberry-Rose		
		d1.2 Aw/saskatoon-pin cherry	CMC9 Aw/Rose-Saskatoon		
		d1.3 Aw/beaked hazelnut	CMC3 Pb-Aw/Beaked hazelnut-Rose		
		d1.4 Aw/green alder	CMC12 Aw/Alder-Willow-Rose		
		d1.5 Aw/low-bush cranberry		CMC10 Aw-Pb/ Rose/ Strawberry	
		d1.6 Aw/rose	CMC8 Aw/Rose/Tall forb	CMC6 Aw/Rose/ Twinflower CMC7 Aw/Rose /Low forb CMC11 Aw/Rose /Clover CMC16 Aw/ Smooth brome	

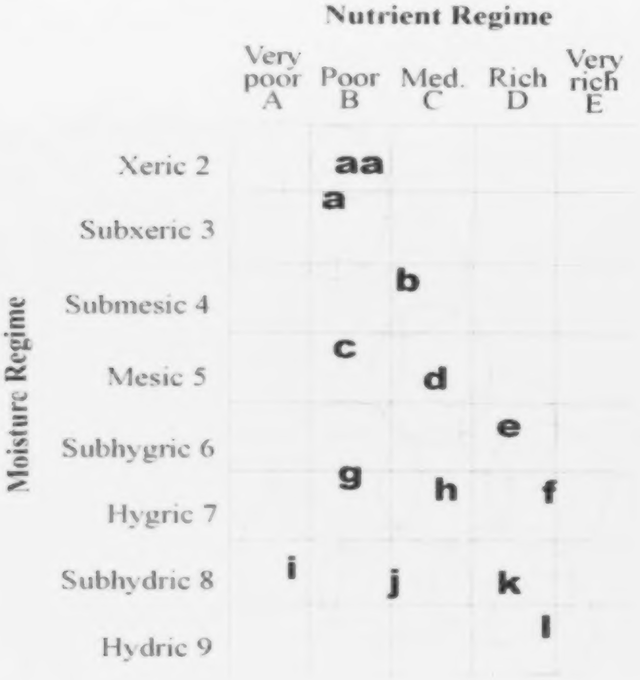
Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
		d1.7 Aw/beaked willow	CMC13 Aw/Willow		CMA11 Willow/ Fireweed
		d1.8 Aw/forb			
		d1.9 Aw/balsam fir			
	d2 low-bush cranberry Aw-Sw	d2.1 Aw-Sw/Canada buffalo-berry			
		d2.2 Aw-Sw/beaked hazelnut	CMD11 Aw-Sw/Hazelnut		
		d2.3 Aw-Sw/green alder			
		d2.4 Aw-Sw/low-bush cranberry			
		d2.5 Aw-Sw/rose	CMD7 Aw-Sw/Rose/Low forb		
		d2.6 Aw-Sw/forb			
		d2.8 Aw-Sw/balsam fir/feather moss			
		d2.9 Aw-Sw/feather moss			
	d3 low-bush cranberry Sw	d3.1 Sw/Canada buffalo-berry			
		d3.2 Sw/green alder			
		d3.3 Sw/low-bush cranberry			CMA12 Willow-Spruce/ Kentucky bluegrass
		d3.4 Sw/balsam fir/feather moss	CMD4 Balsam fir-Sw/Moss		

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
		d3.5 Sw/feather moss	CMD5 Sw/Moss	CMD6 Sw/Creeping red fescue	
	d4 shrubland			CMA4 Snowberry/ Kentucky bluegrass	
e dogwood (subhygric/rich)	e1 dogwood Pb-Aw	e1.1 Pb-Aw/dogwood/fern	CMC14 Aw-Pb/Red osier dogwood-Rose		
		e1.2 Pb-Aw/bracted honeysuckle/fern	CMC1 Pb/Rose-Alder CMC3a Aw-Pb/Honeysuckle		
		e1.3 Pb-Aw/river alder/fern	CMC2 Pb-Aw/River alder		
	e2 dogwood Pb-Sw	e2.1 Pb-Sw/dogwood/fern			
		e2.2 Pb-Sw/bracted honeysuckle/fern			
		e2.3 Pb-Sw/river alder-green alder/fern			
		e2.4 Pb-Sw/balsam fir/fern			
		e2.5 Pb-Sw/fern/feather moss			
	e3 dogwood Sw	e3.1 Sw/dogwood/fern			
		e3.2 Sw/green alder-river alder/fern			
		e3.3 Sw/balsam fir/fern			
		e3.4 Pb-Sw/fern/feather moss			

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
	e4 shrubland		CMA10 Willow-Alder/Marsh reedgrass CMA13 Yellow willow CMA14 Scouler willow-Red osier dogwood CMA15 Bebb willow/Marsh reedgrass	CMA3 Cow parsnip/ Kentucky bluegrass - Marsh reedgrass	
f horsetail (hygric/rich)	f1 horsetail Pb-Aw	f1.1 Pb-Aw/horsetail	CMC15 Aw/Horsetail-Cow parnsip		
	f2 horsetail Pb-Sw	f2.1 Pb-Sw/horsetail			
	f3 horsetail Sw	f3.1 Sw-horsetail	CMD12 Sw/Horsetail		
		f3.2 Sw/feather moss			
g Labrador tea - subhygric (subhygric/poor)	g1 Labrador tea - subhygric Sb-Pj	g1.1 Sb-Pj/Labrador tea/feather moss			
		g1.2 Sb-Pj/feather moss			
h Labrador tea/horsetail (hygric/medium)	h1 Labrador tea/horsetail Sw-Sb	h1.1 Sw-Sb/Labrador tea/horsetail			
		h1.2 Sw-Sb/Labrador tea/feather moss	CMD8 Aw-Sw/Labrador tea/Moss		
i bog (subhygric/very poor)	i1 treed bog	i1.1 Sb/Labrador tea/cloudberry/peat moss	CMD9 Sb/Labrador tea/Peat moss		
	i2 shrubby bog	i2.1 Sb/Labrador tea/cloudberry/peat moss			
j poor fen (subhydric/medium)	j1 treed poor fen	j1.1 Sb-Lt/dwarf birch/sedge/peat moss	CMD10 Sb/Bog birch		
	j2 shrubby poor fen	j2.1 Sb-Lt/dwarf birch/sedge/peat moss	CMC4 Bw/Willow		

Ecological site	Ecological site Phase	Forested Plant Community Type	Reference Range Plant Community	Successional community type	Harvesting and Fire succession
	j3 grass poor fen		CMA18 Short sedge		
k rich fen (subhydric/rich)	k1 treed rich fen	k1.1 Lt/dwarf birch/sedge/golden moss			
	k2 shrubby rich fen	k2.1 dwarf birch/sedge/golden moss			
		k2.2 willow/sedge/brown moss	CMA7 Willow/Sedge	CMA8 Willow/ Sedge-Kentucky bluegrass	
		k2.3 willow/marsh reed grass	CMA9. Willow/Marsh reedgrass		
	k3 graminoid rich fen	k3.1 sedge fen	CMA1. Sedge meadow		
		k3.2 marsh reed grass fen	CMA2. Marsh reedgrass meadow		
l marsh (hydric/rich)	l1 marsh	l1.1 cattail marsh			
		l1.2 reed grass marsh	CMA16 Swamp horsetail CMA17 Tall manna grass		
		l1.3 bulrush marsh			

Figure 6. Edatopic grid for the Central Mixedwood subregion.


Nutrient Regime
Very poor A
Poor B
Med. C
Rich D
Very rich E
Moisture Regime
Xeric 2
Subxeric 3
Submesic 4
Mesic 5
Subhygric 6
Hygric 7
Subhydric 8
Hydric 9
aa
a
b
c
d
e
g
h
f
i
j
k
l

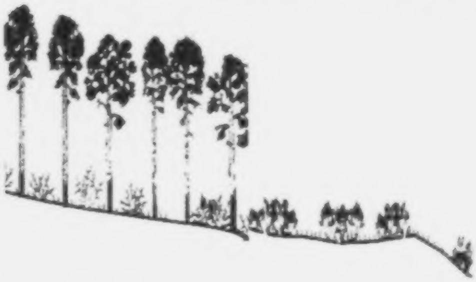
Ecological sites for the Central Mixedwood subregion

aa	**grassland**	(xeric/poor)
a	**lichen**	(subxeric/poor)
b	**blueberry**	(submesic/medium)
c	**Labrador tea-mesic**	(mesic/poor)
d	**low-bush cranberry**	(mesic/medium)
e	**dogwood**	(subhygric/rich)
f	**horsetail**	(hygric/rich)
g	**Labrador tea-subhygric**	(subhygric/poor)
h	**Labrador tea/horsetail**	(hygric/medium)
i	**bog**	(subhygric/very poor)
j	**poor fen**	(subhydric/medium)
k	**rich fen**	(subhydric/rich)
l	**marsh**	(hydric/rich)

aa grass/shrubland (n=6) xeric/poor

GENERAL DESCRIPTION

This ecosite is associated with small grassy openings within Jack pine and aspen forests. This site has dry conditions, with rapidly drained, nutrient poor soils. The parent materials are generally coarse textured eolian, glacialfluvial or fluvial eolian in origin. The high insolation and dry site conditions favour the growth of grassland species. These include Northern ricegrass, slender wheatgrass, Sedge, bearberry and plains wormwood In the moister sites (lower slope positions) aspen and shrubs (saskatoon, rose) are quite common.



SUCCESSIONAL RELATIONSHIPS

Due to the nature of the site grasslands often remain the climax vegetation on these sites. In the moister lower slope positions shrubs often dominate the site with succession to aspen and spruce. On the drier hilltops and midslopes grasslands dominated by plains wormwood and northern ricegrass usually represent the climax vegetation. Heavy grazing pressure on the grasslands can often lead to a degraded site that is dominated by kentucky bluegrass, dandelion, and sedge species.

INDICATOR SPECIES

Blueberry
Rose
Saskatoon
Plains wormwood
Bearberry
Strawberry
Fleabane
Clover
Sheep fescue
Northern ricegrass
Slender wheatgrass
Kentucky bluegrass
Hairy wildrye

SITE CHARACTERISTICS

Moisture regime: xeric, subxeric, submesic
Nutrient regime: poor, medium
Topographic position: crest, upper, mid to lower slope
Slope: (0-2%) (5-10%)
Aspect: south, southwest, west

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mor
Surface texture: SL,L
Effective texture: SL, S
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: E, GF,FE,F
Soil subgroup: O.EB, E.DYB O.R

ECOSITE PHASES

aa1 Plains wormwood (4)

aa1 Plains wormwood (n=4)

CHARACTERISTIC SPECIES

Shrub

[3]	Saskatoon
[1]	Rose
[3]	Blueberry

Forb

[2]	Fleabane
[9]	Plains wormwood*
[2]	Low goldenrod
[1]	Scouring rush
[1]	Clover
[1]	Common yarrow

Grasses

[9]	Sedge species*
[4]	Sheep fescue*
[1]	Creeping red fescue
[17]	Kentucky bluegrass
[4]	Northern ricegrass*
[3]	Purple oatgrass

SITE CHARACTERISTICS

Moisture regime: xeric, subxeric
Nutrient regime: poor,
Topographic position: crest, upper slope, midslope
Slope: 5-10%
Aspect: westerly, southerly

SOIL CHARACTERISTICS

Organic thickness: (0-2)
Humus form: mor
Surface texture: S, SL
Effective texture: S
Depth to Mottles/Gley: none
Drainage: rapid, well
Parent material: E, GF, FE
Soil subgroup: O.R, O.EB

RANGE PLANT COMMUNITY TYPES

DMA3. Plains wormwood/Sheep fescue-Sedge
DMA4. Plains wormwood/Kentucky bluegrass-Sedge

d1a Grazed Aw (n=26)

CHARACTERISTIC SPECIES

Tree

[46]	Aspen*
[10]	Balsam poplar
[3]	White spruce

Shrub

[4]	Raspberry
[2]	Low bush cranberry
[6]	Snowberry
[14]	Rose*
[6]	Willow

Forb

[2]	Northern bedstraw
[5]	Strawberry*
[3]	Yellow peavine
[3]	Bunchberry*
[8]	Twinflower*
[2]	Wild lily-of-the-valley
[3]	Dewberry
[4]	Wintergreen
[1]	Dandelion*
[2]	Clover species*

Grasses

[4]	Marsh reedgrass*
[2]	Hairy wildrye
[1]	Purple oatgrass
[1]	Kentucky bluegrass*

SITE CHARACTERISTICS

Moisture regime:, mesic
Nutrient regime: medium
Topographic position: mid, lower slope, level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15), (0-5)
Humus form: mor, raw moder
Surface texture: SiL, SL, S, L
Effective texture: C, SiC, CL, SCL, SiCL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well, imperfect
Parent material: GF, M, GL
Soil subgroup: O.GL, GR.GL, GL.GL

RANGE PLANT COMMUNITY TYPES

CMC6. Aw/Rose/Twinflower
CMC7. Aw/Rose/Low forb
CMC10. Aw-Pb/Rose/Strawberry
CMC11. Aw/Rose/Clover

d1c Burned Aw (n=1)

CHARACTERISTIC SPECIES

Tree

[1] Aspen*
[1] White birch

Shrub

[1] Raspberry
[21] Willow

Forb

[37] Fireweed*
[2] Strawberry*
[2] Large leafed avens
[2] Common yarrow
[1] Harebell

Grasses

[19] Marsh reedgrass*

Mosses

[11] Moss species

SITE CHARACTERISTICS

Moisture regime:, mesic
Nutrient regime: medium
Topographic position: mid, lower slope, level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15), (0-5)
Humus form: mor, raw moder
Surface texture: SiL, SL, S, L
Effective texture: C, SiC, CL, SCL, SiCL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well, imperfect
Parent material: GF, M, GL
Soil subgroup: O.GL, GR.GL, GL.GL

RANGE PLANT COMMUNITY TYPES

CMA11. Willow/Fireweed

d3c Burned grazed Sw (n=1)

CHARACTERISTIC SPECIES

Tree

[8]	Larch
[5]	Aspen
[25]	White spruce*

Shrub

[6]	Rose
[50]	Willow

Forb

[22]	Clover species*
[5]	Strawberry
[6]	Bishop's cap
[1]	Common yarrow
[14]	Dandelion*
[2]	Canada thistle

Grasses

[1]	Fringed brome
[77]	Kentucky bluegrass*

SITE CHARACTERISTICS

Moisture regime:, mesic, subhygric, submesic
Nutrient regime: medium, rich, poor
Topographic position: mid, lower slope, level
Slope: (0-5), level, (6-9)
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15), (0-5)
Humus form: mor,
Surface texture: SiL, SL, S, CL, L
Effective texture: C, CL, SiC, SCL, SiCL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well, imperfect
Parent material: GF, M, GL, GF/M, L
Soil subgroup: O.GL, BR.GL, GL.GL, E.EB

RANGE PLANT COMMUNITY TYPES

CMA12. Willow/Sw/Kentucky bluegrass

d4 shrubland (n=4)

CHARACTERISTIC SPECIES

Tree

[1]	Aspen

Shrub

[9]	Raspberry
[19]	Snowberry*
[3]	Rose
[5]	Willow

Forb

[1]	Northern bedstraw
[1]	Strawberry
[1]	Large leafed avens
[2]	Cow parsnip
[1]	Fireweed
[2]	Common yarrow
[1]	American vetch
[2]	Canada thistle
[32]	Dandelion*
[29]	Clover species*

Grasses

[7]	Marsh reedgrass*
[3]	Sedge species
[7]	Slender wheatgrass
[38]	Kentucky bluegrass*

SITE CHARACTERISTICS

Moisture regime:, mesic, subhygric
Nutrient regime: medium, rich
Topographic position: level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (0-5)
Humus form: moder
Surface texture: SiL, SL, L
Effective texture: SCL, SiCL, SiL
Depth to Mottles/Gley: none, (0-25)
Drainage: well, mod. well,
Parent material: GF, F, GL
Soil subgroup: O.GL, GL.GL

RANGE PLANT COMMUNITY TYPES

CMA4. Snowberry/Kentucky bluegrass

e4 shrubland (n=10)

CHARACTERISTIC SPECIES

Tree

[5]	Paper birch
[1]	White spruce

Shrub

[14]	Raspberry
[5]	Bracted honeysuckle
[4]	Rose
[11]	Green alder
[12]	River alder
[39]	Willow*
[10]	Yellow willow
[10]	Red osier dogwood

Forb

[1]	Northern bedstraw
[1]	Strawberry
[9]	Horsetail*
[9]	Cow parsnip*
[4]	Fireweed
[4]	Wild sarsaparilla
[2]	American vetch
[5]	Dandelion

Grasses

[29]	Marsh reedgrass*
[5]	Sedge species
[1]	Slender wheatgrass
[3]	Kentucky bluegrass

SITE CHARACTERISTICS

Moisture regime:, subhygric, mesic,
Nutrient regime: rich, medium,
Topographic position: level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: (6-15),(0-5)
Humus form: mor, raw moder
Surface texture: SiL, SL, L, S, SCL
Effective texture: SiC,C, CL, SiCL,SCL,S
Depth to Mottles/Gley: none, (0-25)
Drainage: imperfect, mod. well, poor, well
Parent material: GL, F
Soil subgroup: O.LG, O.G, GL.GL

RANGE PLANT COMMUNITY TYPES

CMA3. Cow parsnip/Kentucky bluegrass-Marsh reedgrass
CMA10. Willow-Alder/Marsh reedgrass
CMA13. Yellow willow
CMA14. Scouler willow-Red osier dogwood
CMA15. Bebb willow/Marsh reedgrass

k2a grazed willow (n=4)

CHARACTERISTIC SPECIES

Shrub

[3]	Rose
[25]	Willow*

Forb

[3]	Mint
[2]	Large leaved avens
[1]	Dock
[5]	Dandelion
[9]	Clover species*
[2]	Plantain
[3]	Strawberry*
[4]	Arrow-leaved coltsfoot

Grasses

[1]	Marsh reedgrass
[44]	Sedge species*
[3]	Fowl bluegrass
[21]	Kentucky bluegrass*

SITE CHARACTERISTICS

Moisture regime:, hydric, subhydric, hygric
Nutrient regime: rich, medium, very rich
Topographic position: level, depression
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: >80, (6-15),(0-5)
Humus form: peatmor
Surface texture: fibric, C, mesic, SiL, humic
Effective texture: mesic, C, hC, fibric, SiC, humic
Depth to Mottles/Gley: none, (0-25)
Drainage: very poor, poor
Parent material: O, GL, L
Soil subgroup: R.G, R.HG, TY.F, O.G

RANGE PLANT COMMUNITY TYPES

CMA8. Willow/Sedge/Kentucky bluegrass

j3 grassland (n=1)

CHARACTERISTIC SPECIES

Shrub

[1] Willow*

Forb

[1] Water hemlock
[1] Skull cap

Grasses

[10] Northern reedgrass*
[60] Short sedge
[20] Water sedge

SITE CHARACTERISTICS

Moisture regime:, subhydric
Nutrient regime: medium,
Topographic position: level
Slope: 0-5%
Aspect: variable

SOIL CHARACTERISTICS

Organic thickness: >80
Humus form:
Surface texture: fibric
Effective texture: fibric
Depth to Mottles/Gley: not applicable
Drainage: very poor
Parent material: O
Soil subgroup: TY.F

RANGE PLANT COMMUNITY TYPES

CMA18. Short sedge

CENTRAL MIXEDWOOD SUBREGION

GRASSLAND AND SHRUBLAND COMMUNITY TYPES

Photo 7. This picture represents the Plains wormwood/Sheep fescue-Sedge community type. This community type is common on dry sandy hills throughout the Central Mixedwood subregion.

CM - NATIVE GRASS AND SHRUBLAND COMMUNITIES

Upland native grasslands are very rare in the Central Mixedwood subregion. The communities that have been described, occur on coarse textured, sandy soil, with xeric to subxeric moisture and poor nutrient regimes which lack tree cover. This includes the Plains wormwood/Sheep fescue-Sedge community type. This community type is usually found in association with jack pine dominated community types. Heavy grazing of this community type can lead to a Kentucky bluegrass-Sedge/Plains wormword dominated type on slightly moister sites. On level, gravelly, well-drained sites adjacent to streams and rivers a snowberry dominated community type is common. This community is extensively grazed by livestock to form the Snowberry/Kentucky bluegrass dominated type (Figure 3).

Wetter (subhydric/rich) sites are associated with sedge, swamp horestail, tall manna grass and marsh reedgrass dominated meadows. Sedge and swamp horsetail species are usually associated with the areas of free standing water, whereas, tall manna grass and marsh reedgrass dominate the better drained, drier edges. Willow will invade into these meadows to form the Willow/Sedge and Willow/Marsh reedgrass community types. Under grazing pressure these community types tended to be invaded by dandelion, clover and Kentucky bluegrass to form the Willow/Sedge-Kentucky bluegrass community type.

Fire is an important part of the ecology of the Central Mixedwood subregion. There are a number of shrubland community types which have a strong fire origin. These include the Willow-River alder/Marsh reedgrass, Willow/Fireweed and Willow-Spruce/ Kentucky bluegrass dominated community types. Other upland shrub communities which are found on nutrient rich, seepage areas include the Scouler and Bebb willow dominated communities.

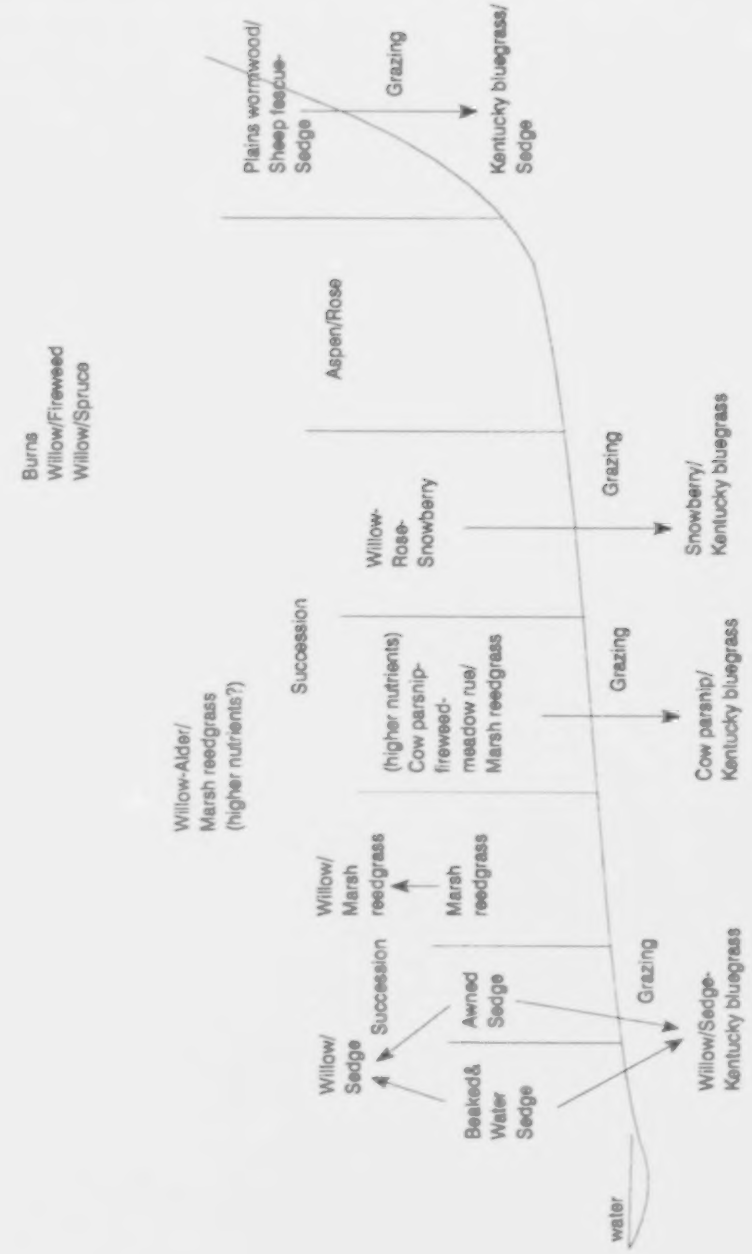

water
Beaked& Water Sedge
Willow/ Sedge
Succession
Awned Sedge
Grazing
Willow/Sedge- Kentucky bluegrass
Willow/ Marsh reedgrass
Marsh reedgrass
Willow-Alder/ Marsh reedgrass (higher nutrients?)
Succession
(higher nutrients) Cow parsnip- fireweed- meadow rue/ Marsh reedgrass
Grazing
Cow parsnip/ Kentucky bluegrass
Willow- Rose- Snowberry
Grazing
Snowberry/ Kentucky bluegrass
Burns
Willow/Fireweed
Willow/Spruce
Aspen/Rose
Plains wormwood/ Sheep fescue- Sedge
Grazing
Kentucky bluegrass/ Sedge

Figure 7. Overview of native shrub and grassland communities in the Central Mixedwood subregion.

Table 7. Production (kg/ha) and stocking rate for the ecological site phase, grass and shrub community types of the Central Mixedwood subregion

Ecological site	Community number	Community type	Total productivity (Kg/ha)	Sustainable Stocking Rate'ha/aum' (Aum/ac)
aa xeric/poor	**Ecological site phase aa1 plains wormwood**		**817**	**1.2**(0.35)
	CMA5	Plains wormwood/Sheep fescue-Sedge	772	1.2(0.35
	CMA6	Plains wormwood/Kentucky bluegrass-Sedge	862	1.1(0.35)
d mesic/medium	**Ecological site phase d4 shrubland**		**2790**	**0.4**(1.0)
	CMA4	Snowberry/Kentucky bluegrass	2790	0.4(1.0)
	Ecological site phase d1 burned aspen		**1748**	**0.5(0.8)**
	CMA11	Willow/Fireweed	1748	0.5(0.8)
	Ecological site phase d3 burned spruce		**1254**	**0.4(1.0)**
	CMA12	Willow-Spruce/Kentucky bluegrass	2524	0.4(1.0)
e subhygric/rich	**Ecological site phase e4 shrubland**		**1543**	**1.2**(0.35)
	CMA3	Cow parsnip/Kentucky bluegrass-Marsh reedgrass	2468	0.4(1.0)
	CMA10	Willow-River alder/Marsh reedgrass	947	1.9(0.2)
	CMA13	Yellow willow	*1000**	Non-use
	CMA14	Scouler willow-Red osier dogwood	*1800**	Non-use
	CMA15	Bebb willow/Marsh reedgrass	*1500**	1.0(0.4)
j subhydric/medium	**Ecological site phase j3 grass poor fen**		***1500***	**Non-use**
	CMA18	Short sedge	*1500**	Non-use
k subhydric/rich	**Ecological site phase k2 shrubby rich fen**		**1301**	**1.4(0.3)**
	CMA7	Willow/Sedge	1072	0.8(0.5)
	CMA9	Willow/Marsh reedgrass	1529	1.9(0.2)
	Ecological site phase k2 grazed shrubland		**2138**	**0.3(1.3)**
	CMA8	Willow/Sedge-Kentucky bluegrass	2138	0.3(1.3)

Sustainable

Ecological site	Community number	Community type	Total productivity (Kg/ha)	Stocking Rate'ha/aum' (Aum/ac)
	Ecological site phase k3 graminoid rich fen		**2244**	**0.4**(1.0)
	CMA1	Sedge meadow	2370	0.4(1.0)
	CMA2	Marsh reedgrass meadow	2117	0.4(1.0)
l hydric/rich	**Ecological site phase l1 reedgrass marsh**		***2000***	**Non-use**
	CMA16	Swamp horsetail	*2000**	Non-use
	CMA17	Tall manna grass	*2000**	Non-use

Note: Numbers with asterix or in italics are estimates.

Central Mixedwood Grass and Shrublands

1. Shrubland dominated by willow, bog birch, alder, understory spruce..............................2
Grass-dominated, or if shrub-dominated, upland species like snowberry...........................7

SHRUBLANDS

2. Sedge, marsh reedgrass dominated understory, wet sites or riparian or seepage areas dominated by yellow, Scouler or Bebb willow..3a
Communities of fire origin, willow, alder, fireweed, understory spruce dominated 5
3. Ungrazed, sedge and marsh reedgrass dominated understory...4
Grazed community type with Kentucky bluegrass.. **Willow/Sedge-Kentucky Bluegrass (CMA8)**
3a. Riparian areas dominated by yellow willow...........**Yellow willow(CMA13)**
Seepage areas dominated by Bebb or Scouler's willow or edges of lakes and sloughs dominated by Marsh reedgrass or sedge in understory..3b
3b. Upland seepage areas dominated by Bebb or Scouler's willow.......................................4a
Wet lowland sites dominated by Marsh reedgrass or sedge species.................................4
4. Wetland sedges dominate understory...**Willow/Sedge (CMA7)**
Marsh reedgrass dominates understory.........................**Willow/Marsh Reedgrass (CMA9)**
4a. Bebb willow dominated community..................**Bebb willow/Marsh reedgrass(CMA15)**
Scouler's willow dominated community......**Scouler willow-Red osier dogwood(CMA16)**
5. Willow, alder dominated community................**Willow-Alder/Marsh Reedgrass (CMA10)**
Willow, fireweed and understory spruce dominated communities.......................................6
6. Willow, fireweed dominated..**Willow/Fireweed (CMA11)**
Willow, spruce dominated.........................**Willow-Spruce/Kentucky Bluegrass (CMA12)**

GRASSLANDS

7. Lowland sites dominated by sedge, marsh reedgrass, swamp horsetail or tall manna grass...7a
Upland sites dominated by snowberry, sage, or cow parsnip..9
7a. Boggy areas dominated by short sedge................**Short sedge (CMA18)**
Freshwater areas dominated by Marsh reedgrass, sedge, swamp horsetail or tall manna grass...7b
7b. Area dominated by sedge or Marsh reedgrass...8
Area dominated by tall manna grass or swamp horsetail...7c
7c. Swamp horsetail dominated site, very wet.............**Swamp horsetail (CMA16)**
Tall manna grass dominated site..............................**Tall manna grass (CMA17)**
8. Wet sites dominated by wetland sedge..**Sedge Meadow (CMA1)**
Slightly drier sites dominated by marsh reedgrass ....**Marsh Reedgrass Meadow (CMA2)**
9. Moist, nutrient rich seepage areas or snowberry dominated areas adjacent to rivers...........10
Dry, sandy sites or south facing slopes dominated by sage or grasses and upland sedge.....11
10. Moist nutrient rich seepage areas dominated by cow parsnip..................**Cow Parsnip/Kentucky Bluegrass-Marsh Reedgrass (CMA3)**
Well drained, gravelly sites adjacent to rivers and

dominated by snowberry......................................**Snowberry/Kentucky Bluegrass (CMA4)**

11. Dry, sandy south facing slopes dominated by plains wormwood, sheep fescue, and sedge...**Plains Wormwood/Sheep Fescue-Sedge (CMA5)**

Grazed, sandy grasslands dominated by Kentucky bluegrass.......................................**Plains Wormwood/Kentucky Bluegrass-Sedge (CMA6)**

CMA1. Sedge meadows

(Carex aquatilis, C. rostrata, C. atherodes)

n=5 This wetland community type is found near fresh water. The sedge meadow is a poorly drained community. As one moves to the drier edges marsh reedgrass becomes predominant. Willows will invade into both the sedge and marsh reedgrass dominated meadows. The sedge meadow community is very productive, but the high water table, particulary in the spring when the sedge species are most palatable, restricts livestock movement. One study done in the Yukon found that crude protein on these meadows declined from a high of 10% in May to less than 5% in September (Bailey et al. 1992).

Beaked sedge found in abundance in this community is usually associated with nitrogen rich conditions and moving water (Brierly et al. 1985). Water sedge is often found in abundance in this community type and is associated with calcium rich stagnant water (MacKinnon et al. 1992).

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
MARSH SKULLCAP			
(Scutellaria galericulata)	5	0-25	20
NODDING BEGGAR TICKS			
(Bidens cernua)	3	0-13	20
DANDELION			
(Taraxacum officinale)	1	0-3	20
GRASSES			
BEAKED SEDGE			
(*Carex rostrata*)	48	8-73	100
AWNED SEDGE			
(*Carex atherodes*)	13	0-57	40
WATER SEDGE			
(*Carex aquatilis*)	3	0-7	100
MARSH REEDGRASS			
(*Calamagrostis canadensis*)	8	0-18	60

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN
RICH
ELEVATION:
485(150-606) M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2209(1498-300)
FORB	161(0-644)
TOTAL	2370(1498-3000)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM(1.0 AUM/AC) (AUTUMN ONLY)

CMA2. Marsh reedgrass meadow

(Calamagrostis canadensis)

n=6 This community is found on the edges of sedge meadows and moist draws where the water table is lower. The lower water table makes this community accessible for most of the grazing season. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and their will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE BIRCH *(Betula papyrifera)*	2	0-14	17
SHRUBS			
WILLOW SPP. *(Salix spp.)*	1	0-2	33
FORBS			
NODDING BEGGARTICKS *(Bidens cernua)*	1	0-1	17
LEAFY-BRACTED ASTER *(Aster sibricus)*	T	0-1	17
DOCK , SORREL *(Rumex crispus)*	1	0-1	33
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	56	34-83	100
BEAKED SEDGE *(Carex rostrata)*	4	0-28	17
WATER SEDGE *(Carex aquatilis)*	4	0-14	33
AWNED SEDGE *(Carex atherodes)*	11	0-33	67

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC

NUTRIENT REGIME (MEAN):
MEDIUM TO RICH

ELEVATION:
320(150-758) M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2068(1052-5110)
FORB	6(0-18)
SHRUB	42(0-254)
TOTAL	2117(1070-5110)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM(1.0AUM/AC)

CMA3. Cow parsnip/Kentucky bluegrass-Marsh reedgrass

(Heracleum lanatum/Poa pratensis-Calamagrostis canadensis)

n=1 This community type is found on fine textured, silty soils adjacent to the Willow river near Wabasca . It represents a Willow/Cow parsnip/Marsh reedgrass community that has been cleared and then grazed extensively. The heavy grazing pressure has allowed dandelion and Kentucky bluegrass to invade onto the site. The high nutrient and moisture regime of this community type makes it extremely productive. Once cleared of shrubs it can provide a significant amount of forage for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
GREEN ALDER (*Alnus crispa*)	1	-	100
PRICKLY ROSE (*Rosa acicularis*)	8	-	10
FORBS			
COW PARSNIP *(Heracleum lanatum)*	42	-	100
HORSETAIL *(Equisetum arvense)*	33	-	100
DANDELION *(Taraxacum officinale)*	27	-	100
FIREWEED *(Epilobium angustifolium)*	19	-	100
YELLOW PEAVINE (*Lathyrus ochroleucus*)	8	-	100
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	15	-	100
MARSH REEDGRASS *(Calamagrostis canadensis)*	10	-	100
FRINGED BROME (*Bromus ciliatus*) 2	-	100	

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
606 M
SOIL DRAINAGE (MEAN):
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	200
FORB	1798
SHRUB	470
TOTAL	2468

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM(1.0AUM/AC)

CMA4. Snowberry/Kentucky bluegrass

(Symphoricarpos occidentalis/Poa pratensis)

n=4 This snowberry dominated community type appears to be common on level, well drained, gravelly areas along rivers throughout Northern Alberta. In the absence of disturbance this community type appears to be dominated by snowberry, rose, fireweed, slender wheatgrass and marsh reedgrass. Heavy grazing pressure causes the native forbs and grasses to decline and allows Kentucky bluegrass, dandelion and clover to increase. Because these clearings are some of the only natural openings throughout the Central Mixedwood they tend to be heavily utilized by livestock. Snowberry which is unpalatable to livestock will remain even under extreme grazing pressure.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	3	0-9	50
BUCKBRUSH (*Symphoricarpos occidentalis*)	19	1-30	100
WILLOW (*Salix spp.*)	5	0-8	75
FORBS			
STRAWBERRY *(Fragaria virginiana)*	1	0-1	75
CLOVER *(Trifolium repens)*	29	0-54	75
DANDELION *(Taraxacum officinale)*	32	5-49	100
YARROW *(Achllea millefolium)*	2	1-4	100
AMERICAN VETCH (*Vicia americana)*	1	0-1	50
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	7	0-24	50
SLENDER WHEATGRASS *(Agropyron trachycaulum)*	7	3-13	100
KENTUCKY BLUEGRASS (*Poa pratensis*)	38	16-73	100
PRAIRIE SEDGE (*Carex prairea*)	1	0-1	25

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC
NUTRIENT REGIME (MEAN):
MEDIUM TO RICH
ELEVATION:
576-606(586) M
SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	1337(800-1800)
FORB	1311(200-2390)
SHRUB	141(0-424)
TOTAL	2790(2000-3614)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

CMA5. Plains wormwood/Sheep fescue-Sedge

(Artemisia campestris/Festuca saximontana-Carex spp.)

n=3 This community type is found on coarse textured, sandy soils. It is generally found on hilltops and south-facing slopes in openings among Jack pine on the uplands and black spruce in the lowlands. This community type was also described on similar site conditions in the Dry Mixedwood subregion. This community would be considered either secondary or non-use range for domestic livestock because of the low forage production and fragile nature of the community.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
SASKATOON (*Amelanchier alnifolia*)	3	1-3	100
BLUEBERRY (*Vaccinium myrtilloides*)	3	0-8	33
FORBS			
SMOOTH SCOURING RUSH *(Equisetum laevigatum)*	1	0-1	33
PLAINS WORMWOOD *(Artemisia campestris)*	9	2-13	100
LOW GOLDENROD *(Solidago missouriensis)*	2	1-3	66
BEARBERRY *(Arctostaphylos uva-ursi)*	5	0-8	67
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	1-4	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	4	0-12	67
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	2	1-5	100
SEDGE (*Carex spp*)	9	7-10	100
SHEEP FESCUE (*Festuca saximontana*)	8	7-10	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC-SUBXERIC

NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
611 (576-652) M
SOIL DRAINAGE (MEAN):
RAPIDLY
SLOPE(RANGE):
22(15-30)%
ASPECT:
SOUTH TO WESTERLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	469(270-612)
FORB	303(200-452)
TOTAL	772(470-978)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.2 HA/AUM (0.35 AUM/AC)

CMA6. Plains wormwood/Kentucky bluegrass-Sedge

(Artemisia campestris/Poa pratensis-Carex spp.)

n=1 This community type is similar to the Plains wormwood/Sheep fescue-Sedge community type, but heavy grazing pressure and a higher nutrient and moisture regime has allowed Kentucky bluegrass to invade onto the site.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
SASKATOON (*Amelanchier alnifolia*)	2	-	100
CHOKECHERRY (*Prunus virginiana*)	8	-	100
SNOWBERRY (*Symphoricarpos occidentalis*)	3	-	100
FORBS			
MEADOW PARSNIP *(Zizia aptera)*	2	-	100
PLAINS WORMWOOD *(Artemisia campestris)*	4	-	100
LOW GOLDENROD *(Solidago missouriensis)*	2	-	100
BEARBERRY *(Arctostaphylos uva-ursi)*	10	-	100
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	49	-	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	4	-	100
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	3	-	100
SEDGE (*Carex spp*)	13	-	100
SHEEP FESCUE (*Festuca saximontana*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
606 M
SOIL DRAINAGE (MEAN):
RAPIDLY
SLOPE(RANGE):
15%
ASPECT:
SOUTH TO WESTERLY
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	824
FORB	38
TOTAL	862

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.1 HA/AUM (0.35 AUM/AC)

CMA7. Willow/Sedge

(*Salix spp./Carex spp.)*

n=6 This community type is found along the edges of sedge meadows and in moist depressions. Willow becomes established at the edges of the sedge meadows due to the shorter duration of standing water. Increased flooding and prolonged waterlogging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION

PLANT COMPOSITION	CANOPY COVER(%) MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP.			
(Salix spp.)	57	26-85	100
FORBS			
MINT			
(Mentha arvensis)	1	0-1	17
GREEN SOREL			
(Rumex acetosa)	1	0-1	17
FIREWEED			
(*Epilobium angustifolium*)	3	0-10	67
HORSETAIL			
(*Equisetum arvense*)	10	0-60	34
GRASSES			
AWNED SEDGE			
(Carex atherodes)	12	0-31	50
MARSH REEDGRASS			
(*Calamagrostis canadensis*)	12	0-20	83
BEAKED SEDGE			
(Carex rostrata)	7	0-20	50
WATER SEDGE			
(*Carex aquatilis*)	14	0-43	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
393(150-636) M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	852(0-1734)
FORB	96(70-150)
SHRUB	100(0-364)
TOTAL	1072(214-2218)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.8 HA /AUM (0.5 AUM/AC)

CMA8. Willow/Sedge-Kentucky bluegrass

(Salix spp./Carex spp.-Poa pratensis)

n=4 This community type is very similar to the Willow/Sedge community, but has been heavily grazed favouring the growth of Kentucky bluegrass and dandelion. Continued heavy grazing pressure will eventually lead to a community that is similar to the Kentucky bluegrass/Dandelion dominated community type.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. *(Salix spp.)*	25	1-40	100
PRICKLY ROSE (*Rosa acicularis*)	3	0-10	25
FORBS			
STRAWBERRY (*Fragaria virginiana)*	3	0-11	25
DANDELION *(Taraxacum offincinale)*	5	0-19	25
MINT *(Mentha arvensis)*	3	0-6	75
CLOVER (*Trifolium spp.*)	9	0-44	25
ARROW LEAVED COLTSFOOT (*Petasites sagittatus*)	9	0-15	50
GRASSES			
SEDGE *(Carex rostrata, aquatilis atherodes.)*	40	12-61	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	21	7-42	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
576 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHYWITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	2121(1566-2478)
FORB	547(492-1204)
TOTAL	2138(2770-2970)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.3 HA /AUM (1.3 AUM/AC)

CMA9. Willow/Marsh reedgrass

(Salix spp./Calamagrostis canadensis, C. inexpansa)

n=9 The Marsh reedgrass community type is found along the edges of sedge meadows and in moist depressions. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and there will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range. Increased flooding and prolonged waterlogging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
WILLOW SPP. *(Salix spp.)*	44	0-80	80
FLAT LEAVED WILLOW (*Salix planifolia*)	12	0-60	22
BEBB WILLOW (*Salix bebbiana*)	2	0-20	11
FORBS			
MINT *(Mentha arvensis)*	1	0-7	44
DANDELION *(Taraxacum officinale)*	2	0-12	56
GRASSES			
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-7	33
MARSH REEDGRASS *(Calamagrostis canadensis)*	22	0-47	89
BEAKED SEDGE *(Carex rostrata)*	5	0-22	56
WATER SEDGE (*Carex aquatilis*)	6	0-23	33
NORTHERN REEDGRASS (*Calamagrostis inexpansa*)	6	0-50	11

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
333-576(537) M

SOIL DRAINAGE (MEAN):
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1050(318-2010)
FORB	107(0-270)
SHRUB	208(0-554)
TOTAL	1529(588-2118)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.6 HA/AUM (0.65 AUM/AC)

CMA10. Willow-River alder/Marsh reedgrass

(Salix spp-Alnus tenuifolia/Calamagrostis canadensis)

n=6 This community type represents a tall willow and alder dominated type that is usually represented as an AIA aspen stand on phase III maps. It is typically found in very moist, poorly drained areas. Black spruce communities are usually found associated with this community type on the wetter edges. The understory of this community type is fairly open allowing for easy access by livestock. When this community is situated next to trails or seismic lines it is moderately utilized by livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
FLAT LEAVED WILLOW *(Salix planifolia)*	6	0-30	33
WILLOW SPP. *(Salix spp.)*	32	0-65	67
RIVER ALDER *(Alnus tenuifolia)*	20	0-40	67
GREEN ALDER *(Alnus crispa)*	9	0-35	33
WILD RED RASPBERRY *(Rubus idaeus)*	11	0-33	50
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	4	0-13	50
FORBS			
STRAWBERRY *(Fragaria virginiana)*	1	0-3	33
SWEET SCENTED BEDSTRAW *(Galium triflorum)*	3	0-11	67
WILD SARSAPARILLA *(Aralia nudicaulis)*	4	0-13	33
DEWBERRY *(Rubus pubscens)*	3	0-11	50
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	40	14-60	100
BEAKED SEDGE *(Carex rostrata)*	5	0-27	17

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-HYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
576 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	702(118-1102)
FORB	184(18-470)
SHRUB	61(0-132)
TOTAL	947(592-1296)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.9 HA /AUM (0.2 AUM/AC)

CMA11. Willow/Fireweed

(Salix spp./Epilobium angustifolium)

n=1 This community type represents a 3 year old burn of a white spruce forest. Fireweed and marsh reedgrass early successional species quickly dominate the community after a fire. As this community undergoes succession the herbaceous understory will be suppressed as a result of shading by white spruce. Eliminating the tree canopy cover has increased the forage production of this site from 50-100 kg/ha under a spruce moss forest to over 1700 kg/ha on this community type.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN			
(*Populus tremuloides*)	1	-	100
WHITE SPRUCE			
(*Picea glauca*)	10	-	100
SHRUBS			
WILLOW SPP.			
(Salix spp.)	21	-	100
FORBS			
STRAWBERRY			
(Fragaria virginiana)	2	-	100
FIREWEED			
(Epilobium angustifolium)	37	-	100
YARROW			
(Achillea millefolium)	2	-	100
LARGE LEAVED YELLOW AVENS			
(Geum macrophyllum)	2	-	100
GRASSES			
MARSH REEDGRASS			
(Calamagrostis canadensis)	19	-	100
HAIR-LIKE SEDGE			
(Carex capillaris)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-MESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
150 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	190
FORB	1322
SHRUB	236
TOTAL	1748

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.5 HA /AUM (0.8 AUM/AC)

CMA12. Willow-Spruce/Kentucky bluegrass

(Salix spp.-Picea glauca/Poa pratensis)

n=1 This community represents an old spruce community which burned in 1968, succeeded to willow, and is now succeeding back to white spruce. After the fire, the canopy was opened up allowing for good forage productivity. Consequently, cattle grazing was quite heavy allowing Kentucky bluegrass and clover to establish. Thistle is now beginning to invade and will expand to other areas if not controlled. As the spruce continues to mature, the increasing canopy cover will cause a decline in overall production and this site will eventually become non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
LARCH (*Larix laricina*)	8	-	100
WHITE SPRUCE(UNDERSTORY) (*Picea glauca*)	3	-	100
SHRUBS			
WILLOW SPP. (*Salix spp.*)	50	-	100
FORBS			
CLOVER (*Trifolium sp.*)	22	-	100
DANDELION (*Taraxacum officinale*)	14	-	100
MARSH HEDGE NETTLE (*Stachys palustris*)	6	-	100
BISHOP'S CAP (*Mitella nuda*)	6	-	100
CANADA THISTLE (*Cirsium arvense*)	2	-	100
GRASSES			
KENTUCKY BLUEGRASS (*Poa pratensis*)	77	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
667 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL TO IMPERFECTLY

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1985
FORB	540
SHRUB	0
TOTAL	2524

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM(1.0 AUM/AC)

CMA13. Yellow willow

(Salix lutea)

n=1 This community type occurs on moist alluvial deposits which are adjacent to streams and rivers. This community can persist for some time if the site is subject to frequent flooding. However in the absence of disturbance it will eventually undergo succession to a spruce dominated community type. Thompson and Hansen (2002) described this community in the grassland natural region of Southern Alberta. They found that this community type disappeared as one moved north into the Parkland and it was replaced by basket willow and flat leaved willow dominated community types. Typically there is little understory vegetation found in this community type and it should be rated as non-use for livestock.

PLANT COMPOSITION	CANOPY COVER (%) MEAN	RANGE	CONST.
SHRUBS			
YELLOW WILLOW (*Salix lutea*)	30	-	100
SHINING WILLOW (*Salix lucida*)	10	-	100
RIVER ALDER (*Alnus tenuifolia*)	3	-	100
FORBS			
HORSETAIL *(Equisetum arvense)*	1	-	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	-	100
DANDELION (*Taraxacum officinale*)	1	-	100
GRAMINOIDS			
MARSH REEDGRASS (*Calamagrostis canadensis*)	10	-	100
KENTUCKY BLUEGRASS (*Poa pratensis*)	1	-	100
QUACKGRASS (*Agropyron repens*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: HYGRIC

NUTRIENT REGIME: RICH

ELEVATION: 600 M

SOIL DRAINAGE: IMPERFECTLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 1000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMA14. Scouler willow-Red osier dogwood

(Salix scouleriana-Cornus stolonifera)

n=1 This community type appears to be transitional between the horsetail (hygric/rich) and shrubby rich fen (subhydric/rich) ecosites described by Beckingham and Archibald (1996). It has plant species characteristic of both ecosites. This community type is also similar to the Willow-Alder/Fern community described on moist, nutrient rich seepage areas in the Lower Foothills subregion (Lane et al. 2000). This community type is very productive, but the high shrub cover and slope conditions make it difficult to graze. Consequently, this community type should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
SCOULER'S WILLOW (*Salix scouleriana*)	60	-	100
BRACTED HONEYSUCKLE (*Lonicera involcrata*)	10	-	100
RED OSIER DOGWOOD (*Cornus stolonifera*)	30	-	100
LOW BUSH CRANBERRY (*Viburnum edule*)	20	-	100
FORBS			
BUNCHBERRY (*Cornus canadensis*)	3	-	100
COMMON HORSETAIL (*Equisetum arvensis*)	1	-	100
FIREWEED (*Epilobium angustifolium*)	3	-	100
DEWBERRY (*Rubus pubescens*)	3	-	100
STRAWBERRY (*Fragaria virginiana*)	3	-	100
GRASSES			
MARSH REEDGRASS (*Calamagrostis canadensis*)	10	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
667 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	580
FORB	1272
TOTAL	1852

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMA15: Bebb willow/Marsh reedgrass

(Salix bebbiana/Calamagrostis canadensis)

n=3 This community type is found along the drier edges of marsh reedgrass meadows and in moist depressions and represents the transition between the flat leaved willow and basket willow dominated shrublands and the upland forest. Bebb willow is an upland species that prefers well drained sites. This species of willow is often found in the understory of aspen and balsam poplar dominated community types. Increased flooding and prolonged water logging may result in the disappearance of Bebb willow and favour the growth of flat leaved willow. In contrast the continued drying of the site will favour the growth of balsam poplar. These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION	CANOPY COVER (%)		
	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR (*Populus balsamifera*)	1	0-1	33
SHRUBS			
BEBB WILLOW *(Salix bebbiana)*	57	50-70	100
FLAT LEAVED WILLOW *(Salix planifolia)*	1	0-3	33
RED OSIER DOGWOOD (*Cornus stolonifera*)	1	0-3	66
BRACTED HONEYSUCKLE (*Lonicera involucrata*)	1	0-3	66
FORBS			
HORSETAIL *(Equisetum arvense)*	13	0-30	66
TALL LUNGWORT *(Mertensia paniculata)*	1	0-3	100
SMALL ENCHANTER'S NIGHTSHADE (*Circaea alpina*)	13	0-40	33
SMALL BEDSTRAW (*Galium trifidum*)	7	0-20	33
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	24	3-40	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME: SUBHYGRIC-HYGRIC

NUTRIENT REGIME: RICH

ELEVATION(MEAN): 600 M

SOIL DRAINAGE: MOD. WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL	1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.0 HA/AUM (0.4 AUM/AC)

CMA16. Swamp horsetail

(Equisetum fluviatile)

n=1 This wetland community type is found near fresh water and is often associated with shallow water around lake shores or saturated wet spots in old river channels and sloughs. This community is often only found in small isolated spots or in narrow bands around the edge of lakes. As these areas dry, swamp horsetail is often replaced by sedge species. Swamp horsetail is generally unpalatable to livestock and the areas it grows in are often to wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
SWAMP HORSETAIL *(Equisetum fluviatile)*	97	-	100
GRASSES			
BEAKED SEDGE (*Carex rostrata)*	3	-	100
TALL MANNA GRASS (*Glyceria grandis*)	1	-	100
SLOUGH GRASS (*Beckmannia syzigachne*)	1	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN):
RICH
ELEVATION:
600 M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL	2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMA17. Tall manna grass

(Glyceria grandis)

n=1 This wetland community type is associated with the edge of the standing water of ponds, sloughs and slow meandering streams. As one moves away from the water to the drier edges the sedge meadow communities are found. This community is often only found in small isolated spots or in narrow bands around the edge of lakes. As these areas dry, tall manna grass is often replaced by sedge species. Tall manna grass is palatable to livestock, however, the areas it grows in are often to wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
MINT *(Mentha arvensis)*	20	-	100
PALE PERSICARIA *(Polygonum lapthifolium)*	3	-	100
CANADA THISTLE (*Cirsium arvense*)	1	-	100
GRASSES			
TALL MANNA GRASS (*Glyceria grandis)*	60	-	100
SLOUGH GRASS (*Beckmannia syzigachne*)	30	-	100
BEBB'S SEDGE (*Carex bebbii*)	10	-	100
CREEPING SPIKE RUSH (*Eleocharis palustris*)	10	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC

NUTRIENT REGIME (MEAN):
RICH

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
VERY POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	2000
TOTAL	2000*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMA18. Short sedge

(Carex curta)

n=1 This community type was described in boggy areas adjacent to black spruce and larch dominated community types. Short sedge tends to be found in the wetter areas where there is a floating mat of peat. As these areas dry out short sedge will be replaced by willow, black spruce and larch species. Short sedge is generally unpalatable to livestock and the areas it grows in are often too wet for livestock to access. This community type should be rated as non-use.

PLANT COMPOSITION	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
SHRUBS			
FLAT LEAVED WILLOW *(Salix planifolia)*	1	-	100
FORBS			
WATER HEMLOCK *(Cicuta maculata)*	1	-	100
SKULL CAP *(Scutellaria galericulata)*	1	-	100
GRASSES			
SHORT SEDGE *(Carex curta)*	60	-	100
WATER SEDGE *(Carex aquatilis)*	20	-	100
NORTHERN REEDGRASS (*Calamagrostis inexpansa*)	10	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC
NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
576-606(584) M
SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

TOTAL 1500*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CENTRAL MIXEDWOOD SUBREGION

TAME FORAGE COMMUNITIES

Photo 8. This range improvement clearing exhibits signs of heavy grazing pressure and is slowly being invaded by tall buttercup.

CM - TAME FORAGE COMMUNITIES

(Cleared areas that have been broken and seeded to tame forage)

Throughout the Central Mixedwood subregion there are sites that have been deforested, broken, and seeded to tame forage. Usually these areas are mesic and moderately well to well drained with good nutrient levels. Because most of these tame forage stands are established on similar sites, the most influential factors affecting plant species composition are stand establishment and grazing regime.

Stand establishment is important because it determines what the initial plant species composition is going to be. Seed bed preparation and the type of seed sown are the two most important factors influencing stand establishment. Seed bed preparation is important because it helps to determine how well the sown seed germinates and establishes. If the seed bed is not well prepared the tame forage stand may establish poorly and native species can become a dominant component of the plant community.

After the stand is established, the grazing regime applied to the stand will determine the plant species composition. Generally, a light to moderate amount of grazing allows the stand to maintain itself while sustained heavy grazing causes the stand to degrade. Damage to a stand due to over grazing occurs more readily while the stand is establishing than it does when the stand is established. This is because the forage plants in an establishing stand have not had time to develop energy reserves in their roots, and are therefore, more susceptible to grazing induced damage.

Well distributed light to moderate grazing will normally maintain a forage stand similar to what was seeded on the site. These stands are generally the most productive and provide the best grazing opportunities for livestock. They are normally considered to be in good to excellent range condition. Non use or very light grazing often results in the stand becoming dominated by the forage species that is most competitive under an ungrazed situation. Plant community changes which occur under heavy grazing are dependent on the grazing history (level of use, season of use and duration of the grazing regime). Overgrazed community types develop over a long period of repeated overgrazing. If weedy species such as Tall Buttercup, become established on overgrazed sites, they can quickly become a dominant species.

Successional sequences of the tame pasture communities in the Central Mixedwood subregion

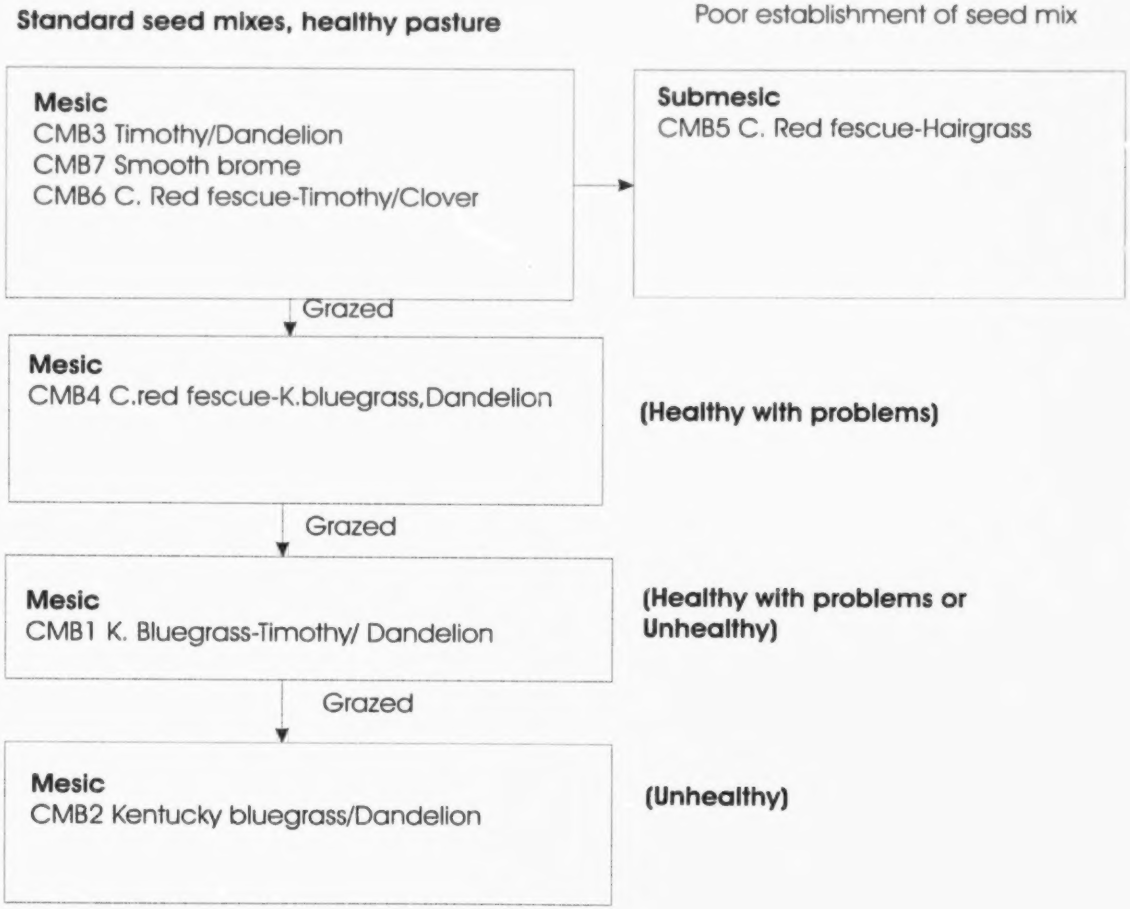

Standard seed mixes, healthy pasture
Poor establishment of seed mix
Mesic
CMB3 Timothy/Dandelion
CMB7 Smooth brome
CMB6 C. Red fescue-Timothy/Clover
Submesic
CMB5 C. Red fescue-Hairgrass
Grazed
Mesic
CMB4 C.red fescue-K.bluegrass,Dandelion
(Healthy with problems)
Grazed
Mesic
CMB1 K. Bluegrass-Timothy/ Dandelion
(Healthy with problems or Unhealthy)
Grazed
Mesic
CMB2 Kentucky bluegrass/Dandelion
(Unhealthy)

Table 8. Tame forage communities of the Central Mixedwood subregion

Ecological Site	Community number	Community type	Productivity (kg/ha)				Sustainable stocking rate 'ha/AUM' (Aum/ac)
			Grass	Forb	Shrub	Total	
mesic/ medium		**Healthy (standard seed mixes)**					
	CMB3	Timothy/Dandelion	2000	470	0	2470	0.3-0.4(1-1.3)
	CMB6	Creeping red fescue-Timothy/Dandelion	1328	750	19	2097	0.3-0.4(1-1.3
	CMB7	Smooth brome	2034	680	0	2714	0.3-0.4(1-1.3)
		Healthy with problems					
	CMB4	Creeping red fescue/Kentucky bluegrass	1859	908	0	2767	0.45-0.58(0.7-0.9)
	CMB2	Kentucky bluegrass-Timothy/Dandelion	1396	1098	17	2793	0.81-1.35(0.3-0.5)
		Unhealthy					
	CMB1	Kentucky bluegrass/Dandelion	2344	843	0	2929	>1.35(<0.3)
submesic/ medium		**Healthy with problems**					
	CMB5	Creeping red fescue/Hairgrass	832	302	0	1134	2.0(0.2)

Tame Grass Plant Communities - Central Mixedwood Subregion

1. Standard seed mix in good to excellent condition..2
   Seeded stand modified by grazing or poorly established...4

2. Stand dominated by smooth brome..**Smooth Brome (CMB7)**
   Stand dominated by timothy or creeping red fescue..3

3. Stand dominated by timothy..**Timothy/Dandelion (CMB3)**
   Stand dominated by creeping
   red fescue..**Creeping Red Fescue-Timothy/Dandelion (CMB6)**

4. Poor establishment of seed mix, extensive bare ground and many weedy
   species..**Creeping Red Fescue-Hairgrass (CMB5)**
   Species composition modified by grazing,
   mid-height grasses uncommon...5

5. Pasture moderately grazed, Kentucky bluegrass
   co-dominant in the stand.................**Creeping Red Fescue-Kentucky Bluegrass (CMB4)**
   Pasture very heavily grazed, Kentucky bluegrass and dandelion dominate the site............6

6. Pasture heavily grazed with some seeded species (brome, timothy, creeping red fescue) still present in the stand..............................**Kentucky Bluegrass-Timothy/Dandelion (CMB2)**
   Pasture very heavily grazed, weedy
   invaders common...**Kentucky Bluegrass/Dandelion (CMB1)**

CMB1. Kentucky bluegrass/Dandelion

(Poa pratensis/Taraxacum officinale)

n=8 This community type has had a history of being grazed heavily throughout the growing season. Heavy grazing throughout the growing season, allows Kentucky bluegrass, clover, and dandelion to out-compete all of the other vegetation. This community occurs on tame pastures or native rangeland that has been over grazed. It is considered to be in poor condition because forage production and nutritional value have been degraded

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
CLOVER			
(Trifolium spp.)	13	0-87	100
DANDELION			
(Taraxacum officinale)	17	1-89	100
PLANTAIN			
(Plantago major) 4	0-26	25	
GRASSES			
SMOOTH BROME			
(Bromus inermis)	6	0-17	62
QUACKGRASS			
(*Agropyron repens*)	12	0-55	41
TIMOTHY			
(Phleum pratense)	2	0-11	38
KENTUCKY BLUEGRASS			
(Poa pratensis)	55	4-81	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
MEDIUM TO RICH

ELEVATION:
576-667(594)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2344(858-5304)
FORBS	843(0-3322)
TOTAL	2929(858-5371)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

CMB2. Kentucky bluegrass-Timothy/Dandelion

(Poa pratensis-Phleum pratense/Taraxacum officinale)

n=6 This community type represents a tame pasture that is showing signs of heavy grazing pressure. The original seed mix species (such as timothy and smooth brome) are still present, however Kentucky bluegrass and dandelion have become established and are starting to take over. If allowed some rest, this field may recover to the original seeded species.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
CLOVER *(Trifolium spp.)*	25	1-67	100
DANDELION *(Taraxacum officinale)*	36	23-47	100
CANADA THISTLE *(Cirsium arvense)*	3	0-19	33
HORSETAIL (*Equisetum arvense*)	6	1-28	100
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	1	0-7	17
FOXTAIL BARLEY *(Hordeum jubatum)*	3	0-16	33
KENTUCKY BLUEGRASS *(Poa pratensis)*	39	10-59	100
TIMOTHY (*Phleum pratense*)	11	1-25	100
SMOOTH BROME (*Bromus inermis*)	2	0-12	33

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

NUTRIENT REGIME (MEAN):
MEDIUM TO RICH

ELEVATION:
576-606(596)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	1396(700-2434)
FORBS	1098(280-2042)
SHRUB	17(0-100)
TOTAL	2793(1300-3902)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.3 HA/AUM (1.0 AUM/AC)

CMB3. Timothy/Dandelion

(Phleum pratense / Taraxacum officinale)

n=1 This community type develops on sites that were seeded with a timothy, meadow foxtail, clover mixture. Timothy establishes very quickly on pastures that have been recently seeded. If this pasture had been seeded with creeping red fescue and smooth brome they eventually will outcompete timothy and this community will likely become dominated by creeping red fescue and smooth brome. Timothy provides excellent forage for domestic livestock, especialy if timothy is kept in the vegetative state by mowing or grazing.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
ALSIKE CLOVER *(Trifolium hybridum)*	2	-	100
DANDELION *(Taraxacum officinale)*	42	-	100
WILD STRAWBERRY *(Fragaria virginiana)*	2	-	100
GRASSES			
MEADOW FOXTAIL *(Alopecurus pratensis)*	3	-	100
TIMOTHY *(Phleum pratense)*	29	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

NUTRIENT REGIME (MEAN):
MEDIUM TO RICH

ELEVATION:
576M
SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2000
FORBS	470
SHRUBS	0
TOTAL	2470

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM(1.0 AUM/AC)

CMB4. Creeping red fescue-Kentucky bluegrass/Dandelion

(Festuca rubra-Poa pratensis/Taraxacum officinale)

n=3 This community type represents recently seeded fields that have since been moderately to heavily grazed. Kentucky bluegrass has increased to equal the level of the seeded species, creeping red fescue. If heavy grazing pressure persists, Kentucky bluegrass and dandelion will dominate resulting in a decline in forage quality. This community type will require a period of rest each year with light to moderate grazing pressure to maintain good cover of creeping red fescue.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	3	0-7	66
FORBS			
CLOVER (*Trifolium spp.*)	2	0-3	66
DANDELION (*Taraxacum officinale*)	6	1-14	100
ALFALFA (*Medicago sativa*)	5	0-15	100
GRASSES			
KENTUCKY BLUEGRASS (*Poa pratensis*)	38	16-52	100
TIMOTHY (*Phleum pratense*)	1	1-2	100
CREEPING RED FESCUE (*Festuca rubra*)	34	24-48	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM

ELEVATION:
579 (576-606)M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	1859(846-2738)
FORBS	2722(120-2348)
SHRUBS	0
TOTAL	2767(1100-5086)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.3 HA/AUM (1.0 AUM/AC)

CMB5. Creeping red fescue-Rough hairgrass

(Festuca rubra-Agrostis scabra)

n=1 This community type represents an area that was cleared and seeded, however due to poor soil conditions, it established poorly. The soils on this site are sandy to a depth of about 6 inches and hairgrass is well adapted to growing on these disturbed sites with poor nutrients. The overall cover of vegetation is sparse, therefore grazing should only be light in order to maintain the little cover of vegetation. This site should not have been approved for range improvement.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
FORBS			
THREE TOOTHED CINQUEFOIL *(Potentilla tridentata)*	3	-	100
ROUGH CINQUEFOIL *(Potentilla norvegica)*	1	-	100
GRASSES			
ROUGH HAIRGRASS *(Agrostis scabra)*	6	-	100
TIMOTHY *(Phleum pratense)*	2	-	100
CREEPING RED FESCUE *(Festuca rubra)*	12	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

NUTRIENT REGIME (MEAN):
POOR

ELEVATION:
579M

SOIL DRAINAGE (MEAN):
WELL

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	832
FORBS	302
SHRUBS	0
TOTAL	1134

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.8 HA/AUM (0.2 AUM/AC)

CMB6. Creeping red fescue-Timothy/Dandelion

(Festuca rubra-Phleum pratense/Taraxacum officinale)

n=9 This community type represents areas cleared of aspen, seeded to timothy, creeping red fescue and clover. In general, these sites are in good condition, but they will require adequate rest periods from grazing each season to remain in good condition.

PLANT COMPOSITION	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
FORBS			
CLOVER *(Trifolium spp.)*	10	0-26	97
DANDELION *(Taraxacum officinale)*	7	0-14	78
COMMON YARROW *(Achillea millefolium)*	1	0-3	56
GRASSES			
CREEPING RED FESCUE *(Festuca rubra)*	50	25-79	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-8	78
TIMOTHY *(Phleum pratense)*	6	0-19	78

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
576-636(603)M
SOIL DRAINAGE (MEAN):
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1328(724-2588)
FORB	750(250-1590)
SHRUB	19(0-162)
TOTAL	2097(1214-3268)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.4 HA/AUM (1.0 AUM/AC)

CMB7. Smooth brome

(Bromus inermis)

n=2 This community type occurs on cleared pastures that were seeded with a smooth brome, timothy-clover mix. With a moderate grazing regime, smooth brome grass is the most competitive forage plant seeded into this site. It out-competes timothy because it is strongly rhizomatous and is able to fill in the gaps between plants allowing it to shade out the timothy. One of the sites had only been recently cleared and the forage species had not yet fully established. As a result, forage production was only 1/3 as high as expected.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
SHRUBS			
PRICKLY ROSE (*Rosa acicularis*)	1	0-2	50
FORBS			
CLOVER *(Trifolium spp.)*	2	0-3	100
GRASSES			
SMOOTH BROME *(Bromus inermis)*	31	24-37	100
SEDGE SPP. *(Carex spp.)*	4	2-6	100
TIMOTHY *(Phleum pratense)*	13	8-17	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	8	1-15	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MEDIUM
ELEVATION:
576M

SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	2034
FORBS	680
TOTAL	2714

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.3 HA/AUM (1.0 AUM/AC)

CENTRAL MIXEDWOOD SUBREGION

DECIDUOUS FOREST COMMUNITY TYPES

Photo 9. Aw/Rose/Clover community type represents a deciduous community that has been moderately to heavily grazed for a number of years.

CM - DECIDUOUS FOREST COMMUNITIES

Balsam poplar is most commonly found on moist upland and alluvial bottomland sites; its best growth is on moist rich bottomlands with deep soil (Peterson and Peterson 1992). The nine stands with predominant balsam poplar (Pb) cover represent four community types in the Central Mixedwood subregion. The Pb-Aw/River alder community is found on lower slope positions and stream channels where there is seepage throughout the growing season. The Pb/Rose-Alder, Pb-Aw/Beaked hazelnut-Rose and Aw-Pb/Honeysuckle community types are found upslope on slightly drier and better drained soils. These three community types integrade into the Aw/Rose dominated community types on mesic/medium ecosites.

White birch is indicative of well-drained, sandy or silty loams (Wilkinson 1990). In Alberta this tree is found in association with balsam poplar on moist sites adjacent to small creeks and lowland areas. Pure stands of Alaska variety white birch are also found on dry sandy ridges with high watertables throughout northern Alberta. Beckingham (1993), found that white birch was well adapted to growing on a soil with a pH of less than 5.3. The White birch/Willow dominated community type maybe indicative of sites with slightly lower pH's.

More mesic sites tend to be dominated by aspen and rose. It is the underlying soil conditions and site history that appear to dictate which forb and shrub species will dominate these mesic sites. Blueberry and twinflower appear to indicate sandy soils with poorer nutrient regimes. An abundance of tall forbs (Aw/Rose/Tall forb) appears to be indicative of higher nutrient regimes that have not been disturbed by livestock. In contrast the low forb (Aw/Rose/Low forb) dominated type occupies sites similar to the tall forb type, but these sites appear to have been disturbed by livestock. Increased grazing pressure on these two community types leads to the formation of strawberry and clover dominated community types (Pb-Aw/Rose/Strawberry, Aw/Rose/Clover).

Sites that have a more subhygric moisture regime and are moderately well-drained tend to be dominated by willow and alder (Aw/Alder-Willow-Rose, Aw/Willow). The Aw/Rose-Saskatoon community was described on south and west facing slopes overlooking streams and rivers. This community is very similar to the community that was described in the Dry Mixedwood subregion. On sites with rich nutrient regimes red osier dogwood and horsetail dominated communities are very common. The Aw/Horsetail community is usually found on moister sites than the Aw-Pb/Red osier dogwood-Rose community type.

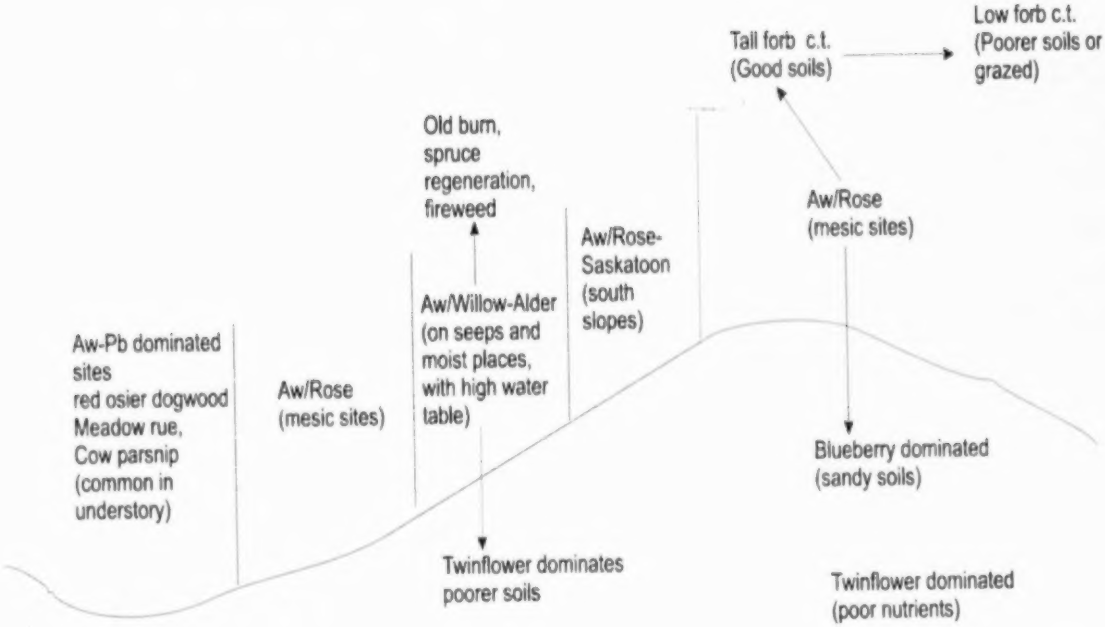

Low forb c.t.
(Poorer soils or
grazed)
Tall forb c.t.
(Good soils)
Old burn,
spruce
regeneration,
fireweed
Aw/Rose
(mesic sites)
Aw/Rose-
Saskatoon
(south
slopes)
Aw/Willow-Alder
(on seeps and
moist places,
with high water
table)
Aw-Pb dominated
sites
red osier dogwood
Meadow rue,
Cow parsnip
(common in
understory)
Aw/Rose
(mesic sites)
Blueberry dominated
(sandy soils)
Twinflower dominates
poorer soils
Twinflower dominated
(poor nutrients)

Figure 4 Sequence of Aspen/Rose dominated community types in the landscape of the Central Mixedwood subregion.

Table 9. Production (kg/ha) and ecologically sustainable stocking rate (ha/AUM) for the ecological site phases, and deciduous community types described in the Central Mixedwood subregion

Ecological site	Community number	Community type	Productivity (kg/ha)				Sustainable stocking rate
			Grass	Forb	Shrub	Total	'ha/AUM' (AUM/ac)
b submesic/ medium	**Ecological site phase**	**b2 blueberry Aw**	**1005**	**169**	**138**	**1312**	**1.4(0.3)**
	CMC5	Aw/Blueberry	1005	169	138	1312	1.4(0.3)
d mesic/ medium	**Ecological site phase**	**d1 low-bush cranberry Aw**	**174**	**327**	**291**	**792**	**2.5(0.2)**
	CMC3	Pb-Aw/Beaked hazelnut-Rose	222	272	411	905	2.0(0.2)
	CMC8	Aw/Rose/Tall forb	202	352	257	811	2.0(0.2)
	CMC8a	Aw/Buffaloberry-Rose	61	364	532	957	2.0(0.2)
	CMC9	Aw/Rose-Saskatoon	25	279	111	415	4.0(0.1)
	CMC12	Aw/Alder-Willow-Rose	75	200	225	499	3.6(0.1)
	CMC13	Aw/Willow	461	493	209	1162	1.6(0.25)
	Ecological site phase	**d1 grazed Aw**	**267**	**259**	**178**	**712**	**3.0(0.15)**
	CMC6	Aw/Rose/Twinflower	41	183	125	372	4.9(>0.1)

Table 9. Production (kg/ha) and ecologically sustainable stocking rate (ha/AUM) for the ecological site phases, and deciduous community types described in the Central Mixedwood subregion

	CMC7	Aw/Rose/Low forb	253	334	235	837	2.0(0.2)
	CMC10	Aw-Pb/Rose/Strawberry	259	327	128	709	3.0(0.15)
	CMC11	Aw/Rose/Clover	512	192	224	928	2.0(0.2)
	CMC16	Aw/Smooth brome				*1100*	1.8(0.2)
e subhygric/ rich	**Ecological site phase**	**e1 dogwood Pb-Aw**	**88**	**294**	**319**	**701**	**2.6(0.15)**
	CMC1	Pb/Rose-Alder	185	490	154	829	2.2(0.2)
	CMC2	Pb-Aw/River alder	7	193	340	540	Non-use
	CMC3a	Aw-Pb/Honeysuckle	151	288	517	956	2.0(0.2)
	CMC14	Aw-Pb/Red Osier dogwood-Rose	7	205	265	479	Non-use
f hygric/rich	**Ecological site phase**	**f1 horsetail Pb-Aw**	**1292**	**1440**		**2732**	**0.7(0.55)**
	CMC15	Aw/Horsetail-Cow parsnip	1292	1440		2732	0.7(0.55)
j subhydric/ medium	**Ecological site phase**	**j2 shrubby poor fen**	**340**	**342**	**74**	**752**	**Non-use**
	CMC4	Bw/Willow	340	342	74	752	Non-use

Deciduous Community Types - Central Mixedwood Subregion

1. Community dominated by balsam poplar or birch, richer, moister sites (aspen may
   be present but is only co-dominant)..........2
   Community dominated by aspen, mesic sites..........7

2. Community dominated by paper birch,
   with willow understory..........**Bw/Willow (CMC4)**
   Community dominated by Pb, Bw and Aw only minor..........3

3. Understory dominated by hazelnut,
   mesic sites..........**Pb-Aw/Beaked Hazelnut-Rose (CMC3)**
   Community dominated by green or river
   alder, honeysuckle or red osier dogwood..........4

4. Community understory dominated by honeysuckle..........**Aw-Pb/Honeysuckle (CMC3a)**
   Community dominated by river or green alder or red osier dogwood..........5

5. Community dominated by river or green alder..........6
   Community dominated by red osier dogwood, fluvial floodplains next to rivers..........11

6. Community dominated by green alder,
   more upland sites with mesic moisture regimes..........**Pb/Rose-Alder (CMC1)**
   Community dominated by river alder,
   moist seepage areas next to rivers..........**Pb-Aw/River Alder (CMC2)**

7. Willow, alder dominate the understory..........8
   Rose, red osier dogwood, saskatoon, buffaloberry, red raspberry and blueberry dominate
   understory..........9

8. Willow dominates understory, alder cover very small,
   fire origin..........**Aw/Willow (CMC13)**
   Alder dominates understory, fire origin..........**Aw/Alder-Willow-Rose (CMC12)**

9. Blueberry dominates shrub layer, rose is co-dominant,
   dry, sandy soils..........**Aw/Blueberry (CMC5)**
   Mesic or richer sites dominated by buffaloberry, rose, saskatoon, red osier dogwood..........10

10. Buffaloberry dominates shrub understory..........**Aw/Buffaloberry-Rose (CMC8a)**
    Rose, red raspberry, saskatoon, or red-osier dogwood
    dominate shrub layer..........11

11. Red osier dogwood is dominant shrub, rose is co-dominant, community type found on rich fluvial floodplains adjacent to river or stream..**Aw-Pb/Red Osier Dogwood-Rose (CMC14)**
Rose, red raspberry or saskatoon dominate shrub layer..12

12. Saskatoon is dominant shrub with rose, community type found on south facing slopes above rivers and streams..**Aw/Rose-Saskatoon (CMC9)**
Rose or red raspberry is dominant shrub..13

13. Community not modified appreciably by grazing (tall forb dominated)..........................14
Community moderately to severely modified by grazing (low forb dominated) or poorer nutrient sites which are dominated by twinflower or smooth brome........................15

14. Mesic sites, forb layer dominated by tall forbs, wild sarsaparilla, showy aster, fireweed, peavine...**Aw/Rose/Tall Forb (CMC8)**
Nutrient rich seepage areas, little rose cover, red raspberry dominant shrub, understory dominated by horsetail and cow parsnip, moist type associated with willow lowlands..**Aw/Horsetail-Cow Parsnip (CMC15)**

15. Clover common in understory..**Aw/Rose/Clover (CMC11)**
Clover not common in understory (low forb or smooth brome dominated)................16

16. Twinflower dominates forb layer, poorer soils..................**Aw/Rose/Twinflower (CMC6)**
Other low forbs or smooth brome dominate understory (bunchberry, wintergreen, strawberry, wild lily of the valley)...17

17. Moderately grazed, Pb in overstory.........................**Aw-Pb/Rose/Strawberry (CMC10)**
Aspen dominated, forb layer dominated by low forbs, smooth brome strawberry,
bunchberry,
wintergreen, etc., site partially grazed,low cover of shrubs..18

18. Native understory dominated by low growing forbs...**Aw/Rose/Low forb (CMC7)**
Smooth brome dominates the understory....................**Aw/Smooth brome (CMC16)**

CMC1. Pb/Alder-Rose

(Populus balsamifera/ Alnus crispa- Rosa acicularis)

n=4 This community was found on moderately well-drained sites with subhygric moisture regimes. Beckingham (1993), described a similar community type. He found these forests to develop on parent materials that are neutral to alkaline, thus they tended to have a relatively high level of nutrient availability and potentially high production levels.

This commmunity is producing only a moderate forage base for domestic livestock. Green alder, which makes up a large part of the total forage production for this vegetation type, is generally unpalatable to livestock. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	1	0-2	25
BALSAM POPLAR *(Populus balsamifera)*	50	10-65	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	13	6-16	100
GREEN ALDER *(Alnus crispa)*	21	12-40	100
LOW BUSH CRANBERRY *(Viburnum edule)*	8	0-16	75
FORBS			
STRAWBERRY *(Fragaria virginiana)*	5	1-10	100
TWINFLOWER *(Linnaea borealis)*	1	0-4	75
NORTHERN BEDSTRAW *(Galium boreale)*	4	0-8	75
TALL LUNGWORT *(Mertensia paniculata)*	4	3-7	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	1-6	100
WILD SARSAPARILLA *(Aralia nudicaulis)*	1	0-2	25
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	6	2-8	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
567 M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	185(0-552)
FORBS	490(234-978)
SHRUBS	154(0-250)
TOTAL	829(474-1530)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.2 HA/AUM(0.2 AUM/AC)

CMC2. Pb-Aw/River alder

(Populus balsamifera-Populus tremuloides/Alnus tenuifolia)

n=4 This community type is found on moist lower slope positions. A similar community type was described on similar sites in the Lower Foothills subregion (Willoughby and Downing 1995). The high cover of alder limits the light reaching the understory and results in low production of grass and forbs. The majority of the total forage production comes from alder which is generally inaccessible and unpalatable to livestock. Consequently this community type would be rated as non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	23	0-35	75
BALSAM POPLAR *(Populus balsamifera)*	26	19-45	100
SHRUBS			
RIVER ALDER *(Alnus tenuifolia)*	27	7-35	100
RED OSIER DOGWOOD *(Cornus stolonifera)*	10	5-17	100
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	3	0-10	25
PRICKLY ROSE *(Rosa acicularis)*	9	4-18	100
LOW BUSH CRANBERRY *(Viburnum edule)*	4	1-10	100
FORBS			
HORSETAIL *(Equisetum arvense)*	14	1-45	100
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	6	1-8	100
BISHOP'S CAP *(Mitella nuda)*	4	0-7	75
WILD STRAWBERRY *(Fragaria virginiana)*	3	2-4	75
LINDLEY'S ASTER *(Aster ciliolatus)*	2	2-4	75
YELLOW PEAVINE *(Lathyrus ochroleucus)*	3	2-5	75
WILD SARSAPARILLA *(Aralia nudicaulis)*	2	0-7	50
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	1	0-4	75

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC TO HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
454(150-606) M

PERCENT SLOPE GRADIENT:
0 - 2

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	7(2-20)
FORBS	193(62-376)
SHRUBS	340(200-438)
TOTAL	540(202-816)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMC3. Pb-Aw/Beaked hazelnut-Rose

(Populus balsamifera-Populus tremuloides/Corylus cornuta-Rosa acicularis)

n=2 This community type was described on south facing slopes and is very similar to the the beaked hazelnut communities described in the Dry Mixedwood subregion. This type appears to occupy warmer and drier microsites that resemble the Dry Mixedwood's climate. The total production of this type is high, but the majority of production is coming from hazelnut which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock, limiting the forage availability. This community would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN			
(Populus tremuloides)	33	25-40	100
BALSAM POPLAR			
(Populus balsamifera)	33	0-65	50
SHRUBS			
HAZELNUT			
(Corylus cornuta)	23	13-32	100
SASKATOON			
(Amelanchier alnifolia)	6	0-12	50
WILD RED RASPBERRY			
(Rubus idaeus)	6	0-11	50
PRICKLY ROSE			
(Rosa acicularis)	8	4-12	100
FORBS			
WILD LILY-OF-THE-VALLEY			
(Maianthemum canadense)	5	1-8	100
DEWBERRY OR RUNNING RASPBERRY			
(Rubus pubescens)	6	0-12	50
YELLOW PEAVINE			
(Lathyrus ochroleucus)	4	1-6	100
VEINY MEADOW RUE			
(Thalictrum venulosum)	3	2-3	100
WILD SARSAPARILLA			
(Aralia nudicaulis)	11	0-23	50
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	5	0-9	50
MOUNTAIN RICEGRASS			
(Oryzopsis asperifolia)	3	0-7	50
SEDGE			
(Carex spp.)	5	0-10	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC
ELEVATION:
588(576-600) M
PERCENT SLOPE GRADIENT:
5-10(7.5)%
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	222(74-370)
FORBS	272(234-310)
SHRUBS	411(152-670)
TOTAL	905(756-1054)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC3a. Aw-Pb/Honeysuckle

(Populus tremuloides- Populus balsamifera /Lonicera involucrata)

n=6 This community type is represented by one of the Public Lands Peace River benchmark sites. It is a relatively moist and nutrient rich site and represents the honeysuckle ecosite as described by Beckingham and Archibald (1996). The high tree and shrub layer limit the amount of light reaching the forest floor. Consquently, there is little growth of grasses and forbs. Shrub production is largely honeysuckle which is generally unpalatable to domestic livestock. This community type should be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	13	0-60	67
BALSAM POPLAR *(Populus balsamifera)*	57	2-90	100
SHRUBS			
HONEYSUCKLE *(Lonicera involcrata)*	9	0-31	83
RED OSIER DOGWOOD *(Cornus stolonifera)*	4	0-10	83
WILD RED RASPBERRY *(Rubus idaeus)*	4	0-13	83
PRICKLY ROSE *(Rosa acicularis)*	14	3-20	100
FORBS			
FIREWEED *(Epilobium angustifolium)*	1	0-5	100
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	2	0-3	67
PALMATE LEAVED COLTSFOOT *(Petasites palmatus)*	1	1-3	100
TALL LUNGWORT *(Mertensia paniculata)*	4	0-10	83
WILD SARSAPARILLA *(Aralia nudicaulis)*	8	0-20	67
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	9	3-20	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
PERMESOTROPHIC
ELEVATION:
869 M
SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	151
FORBS	288
SHRUBS	517
TOTAL	956

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC4. Bw/Willow

(Betula papyrifera/Salix spp.)

n=1 This community type was described on a very moist site that was burned or cleared and is now undergoing succession to a paper birch dominated community type. The understory of this community type is dominated by sphagnum moss, which is characteristic of the poor fen ecosite described by Beckingham and Archibald (1996). The site was likely dominated by black spruce and larch prior to disturbance. The poor nutrient status and very moist conditions make this community type unsuitable for livestock grazing. This community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
PAPER BIRCH			
(Betula papyrifera)	55	-	100
SHRUBS			
WILLOW			
(Salix spp.)	50	-	100
FORBS			
SMALL BOG CRANBERRY			
(Oxycoccus microcarpus)	25	-	100
SWAMP HORSETAIL			
(Equisetum fluviatile)	19	-	100
MARSH CINQUEFOIL			
(Potentilla palustris)	12	-	100
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	7	-	100
HAIR-LIKE SEDGE			
(*Carex capillaris*)	6	-	100
BEAKED SEDGE			
(*Carex rostrata*)	6	-	100
MOSSES			
PEAT MOSS			
(*Sphagnum spp.*)	93	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
576 M

SOIL DRAINAGE:
VERY POOR

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	340
FORBS	342
SHRUBS	74
TOTAL	756

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMC5. Aw/Blueberry

(Populus tremuloides/ Vaccinium myrtilloides)

n=4 This is a very dry, well-drained community type with sandy soil. It is found in conjunction with jack pine stands. Productivity of shrubs is largely blueberry, which is unpalatable to livestock.

These stands tend to be relatively open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this community type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease.

PLANT COMPOSITION

PLANT COMPOSITION	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	45	35-60	100
SHRUBS			
WILLOW *(Salix spp.)*	5	0-20	50
WILD RED RASPBERRY *(Rubus idaeus)*	2	0-5	50
BLUEBERRY *(Vaccinium myrtilloides)*	20	11-37	100
PRICKLY ROSE *(Rosa acicularis)*	11	6-16	100
FORBS			
BUNCHBERRY *(Cornus canadensis)*	7	1-21	100
BEARBERRY *(Arctostaphylos uva-ursi)*	3	0-13	25
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	1-8	100
TWINFLOWER *(Linnaea borealis)*	4	0-7	75
STRAWBERRY *(Fragaria virginiana)*	4	1-5	100
GRASSES			
PURPLE OATGRASS *(Schizachne purpurascens)*	3	0-7	75
HAIRY WILDRYE *(Elymus innovatus)*	5	0-10	75
MOUNTAIN RICEGRASS *(Oryzopsis asperfolia)*	3	1-6	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
604(600-606) M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1005(98-1794)
FORBS	169(0-388)
SHRUBS	138(0-452)
TOTAL	1312(762-1794)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.4 HA/AUM (0.3 AUM/AC)

CMC6. Aw/Rose/Twinflower

(Populus tremuloides/ Rosa acicularis/Linnaea borealis)

n=6 This community type has been grazed moderately to heavily and is very similar to the grazed Pb/Rose/Strawberry and Aw/Rose/Low forb community types. Grazing pressure reduces the cover of shrubs and tall-growing forbs and allows the low-growing forbs to increase in cover. This community type occupies soils with poor nutrient regimes. The poor nutrient status appears to favour the growth of twinflower, a species that is well adapted to growing on poor soils (Corns and Annas 1986). This may explain why twinflower is predominant on this community type and not on the other grazed community types.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR *(Populus balsamifera)*	3	0-15	17
TREMBLING ASPEN *(Populus tremuloides)*	53	25-75	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	11	6-18	100
WILD RED RASPBERRY *(Rubus idaeus)*	1	0-1	50
LOW BUSH CRANBERRY *(Viburnum edule)*	2	0-7	83
SNOWBERRY OR BUCKBRUSH *(Symphoricarpos occidentalis)*	3	1-5	100
FORBS			
CREAM-COLOURED VETCHLING *(Lathyrus ochroleucus)*	3	1-7	100
BUNCHBERRY *(Cornus canadensis)*	5	1-10	100
TWINFLOWER *(Linnaea borealis)*	19	11-31	100
STRAWBERRY *(Fragaria virginiana)*	5	2-9	100
WINTER GREEN (*Pyrola asarifolia*)	3	1-7	100
GRASSES			
MOUNTAIN RICEGRASS *(Oryzopsis asperifolia)*	1	0-7	33
HAIRY WILDRYE (*Elymus innovatus*)	3	0-5	83
PURPLE OATGRASS (*Schizachne purpurascens*)	3	0-5	83
KENTUCKY BLUEGRASS (*Poa pratensis*)	2	0-6	83

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC TO MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
634(579-733) M

PERCENT SLOPE GRADIENT:
2(0-5)%

SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	56(6-134)
FORBS	230(70-464)
SHRUBS	120(16-294)
TOTAL	406(190-692)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
4.9 HA/AUM (>0.1 AUM/AC)

CMC7. Aw/Rose/Low forb

(Populus tremuloides/Rosa acicularis/Low forb)

n=15 This type occupies mesic, well-drained sites with medium nutrient regimes. This type is similar to the Aw/Rose/Tall forb community type, but this type appears to occupy drier sites with poorer nutrient regimes. It has also been observed that this type can also be produced when the tall forb community is grazed for a number of years. The increased grazing pressure may explain why the production on this type is lower than the tall forb type. Forage production in this type is good, but the low-growing forbs are not as accessible to livestock as the tall growing forbs. Despite these limitations this community type should still be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN			
(Populus tremuloides)	49	25-70	100
BALSAM POPLAR			
(*Populus balsamifera*)	8	0-20	53
WHITE SPRUCE			
(*Picea glauca*)	2	0-8	47
SHRUBS			
SASKATOON			
(Amelanchier alnifolia)	3	0-16	53
PRICKLY ROSE			
(Rosa acicularis)	16	4-42	100
WILD RED RASPBERRY			
(Rubus idaeus)	6	0-23	73
SNOWBERRY			
(Symphoricarpos occidentalis)	8	0-36	80
LOW BUSH CRANBERRY			
(*Viburnum edule*)	3	0-9	73
FORBS			
STRAWBERRY			
(Fragaria virginiana)	5	0-10	93
FIREWEED			
(Epilobium angustifolium)	3	0-10	80
YELLOW PEAVINE			
(*Lathyrus ochroleucus*)	3	0-11	73
DEWBERRY OR RUNNING RASPBERRY			
(Rubus pubescens)	4	0-10	73
LINDLEY'S ASTER			
(Aster ciliolatus)	3	0-8	73
GRASSES			
MARSH REED GRASS			
(Calamagrostis canadensis)	6	0-20	93
HAIRY WILDRYE			
(*Elymus innovatus*)	3	0-12	53

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
617(579-667) M
PERCENT SLOPE GRADIENT:
3(0-15)%
ASPECT:
VARIABLE
SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	250(6-660)
FORBS	335(76-830)
SHRUBS	270(38-1154)
TOTAL	842(312-2086)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC8. Aw/Rose/Tall forb

(Populus tremuloides/Rosa acicularis/Tall forb)

n=17 This type appears to be the modal aspen community type in the absence of disturbance on mesic, medium to rich sites. The presence of tall forbs wild sarsaparilla, fireweed, and peavine distinguish this community from the low forb type. It is unclear why there is a difference in the tall and low forb types. Corns and Annas (1986) recoqnized the two types in the Lower Foothills subregion. They felt the wild sarsaparilla type was moister and had a higher nutrient regime. It has also been observed that the low forb type can be produced when the tall forb community is lightly to moderately grazed for a number of years (Willoughby 1996).

The forage production on this community type is good. The majority of the vegetation is palatable to livestock. This community type would be rated as primary range for domestic livestock. Wild sarsaparilla, a major component of this community type appears to be very sensitive to any disturbance by livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
BALSAM POPLAR *(Populus balsamifera)*	7	0-30	50
TREMBLING ASPEN *(Populus tremuloides)*	52	10-75	100
SHRUBS			
RED OSIER DOGWOOD *(Cornus stolonifera)*	3	0-7	59
WILD RED RASPBERRY *(Rubus ideaus)*	2	0-5	65
PRICKLY ROSE *(Rosa acicularis)*	16	5-33	100
LOW BUSH CRANBERRY (*Viburnum edule*)	8	0-26	88
FORBS			
WILD SARSAPARILLA *(Aralia nudicaulis)*	20	6-69	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	1-12	100
DEWBERRY *(Rubus pubescens)*	5	0-15	88
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-2	81
FIREWEED (*Epilobium angustifolium*)	5	0-19	81
STRAWBERRY (*Fragaria virginiana*)	3	0-9	81
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	7	2-21	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC
ELEVATION:
617(576-697)M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	188(3-812)
FORBS	379(179-480)
SHRUBS	318(60-1058)
TOTAL	884(459-1470)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC8a. Aw/Buffaloberry-Rose

(Populus tremuloides/Shepherdia canadensis-Rosa acicularis)

n=1 This community type was found on a mesic site at higher elevations in the Central Mixedwood subregion west of Beaverlodge. Beckingham (1993) felt the Aw/Buffaloberry type was slightly drier and had a slightly poorer nutrient regime than the modal Aw/Rose community types. This type is providing a moderate amount of forage for domestic livestock, but the drier site conditions and poorer nutrient status will limit regrowth after grazing. Buffaloberry the predominant shrub species in this community type, is generally unpalatable to livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	75	-	100
SHRUBS			
BUFFALOBERRY *(Shepherdia canadensis)*	26	-	100
PRICKLY ROSE *(Rosa acicularis)*	11	-	100
LOW BUSH CRANBERRY (*Viburnum edule*)	13	-	100
FORBS			
BUNCHBERRY *(Cornus canadensis)*	16	-	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	2	-	100
DEWBERRY *(Rubus pubescens)*	2	-	100
FIREWEED (*Epilobium angustifolium*)	6	-	100
STRAWBERRY (*Fragaria virginiana*)	3	-	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC TO SUBMESOTROPHIC
ELEVATION:
800M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	61
FORBS	364
SHRUBS	532
TOTAL	957

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC9. Pb-Aw/Rose-Saskatoon

(Populus balsamifera-Populus tremuloides/Rosa acicularis-Amelanchier alnifolia)

n=2 This community type is found on mesic, well drained south facing slopes that overlook rivers and creeks. This community is also similar to the Aw/Saskatoon-Rose community that was described in the Dry Mixedwood subregion. Both community types occur on south and west facing slopes. Saskatoon provides important browse for wild ungulates. Livestock also find saskatoon palatable and in areas where there is extensive cattle grazing this species can be heavily browsed.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	20	5-35	100
BALSAM POPLAR *(Populus balsamifera)*	44	7-80	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	22	6-38	100
SASKATOON *(Amelanchier alnifolia)*	25	5-45	100
RED OSIER DOGWOOD *(Cornus stolonifera)*	7	5-8	100
RIVER ALDER *(Alnus tenuifolia)*	8	0-15	50
WILLOW *(Salix spp.)*	8	0-15	50
FORBS			
HORSETAIL *(Equisetum arvense)*	3	1-3	100
BUNCHBERRY *(Cornus canadensis)*	1	0-1	50
TALL LUNGWORT *(Mertensia paniculata)*	2	0-3	50
DEWBERRY *(Rubus pubescens)*	3	2-3	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	0-8	50
WILD SARSAPARILLA *(Aralia nudicaulis)*	3	0-5	50
STRAWBERRY *(Fragaria virginiana)*	4	0-7	50
GRASSES			
MOUNTAIN RICEGRASS *(Oryzopsis asperifolia)*	1	0-1	50

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
606 M
SOIL DRAINAGE:
WELL TO RAPIDLY
SLOPE:
26(2-50)%
ASPECT:
WESTERLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	25(0-50)
FORBS	279(240-318)
SHRUBS	111(10-212)
TOTAL	415(250-580)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
4.0 HA/AUM (0.1 AUM/AC)

CMC10. Aw-Pb/Rose/Strawberry

(Populus tremuloides-Populus balsamifera/Rosa acicularis/Fragaria virginiana)

n=4 This community type appears to have been moderately grazed in the past. As grazing pressure becomes heavy, there is a reduction in shrub, tall forbs and native grass cover and an increase in cover of low growing forbs(dandelion and strawberry). Continued heavy grazing pressure eventually leads to a decline in all native plants and Kentucky bluegrass, clover and dandelion will predominate in the understory (Willoughby 1996). The forage production on this community type is only moderate and is slightly less than other Aw and Pb dominated community types. A period of rest would greatly benefit the production on this community type.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE BIRCH			
(Betula papyrifera)	3	0-10	25
BALSAM POPLAR			
(Populus balsamifera)	28	10-45	100
ASPEN			
(*Populus tremuloides*)	41	0-50	75
SHRUBS			
PRICKLY ROSE			
(Rosa acicularis)	14	6-25	100
LOW BUSH CRANBERRY			
(Viburnum edule)	1	0-5	25
SNOWBERRY OR BUCKBRUSH			
(Symphoricarpos occidentalis)	6	1-14	100
WILD RED RASPBERRY			
(Rubus idaeus)	2	0-4	50
FORBS			
WILD STRAWBERRY			
(Fragaria virginiana)	13	1-30	100
DANDELION			
(Taraxacum officinale)	3	1-6	100
DEWBERRY OR RUNNING RASPBERRY			
(Rubus pubescens)	2	0-5	75
NORTHERN BEDSTRAW			
(Galium boreale)	2	1-3	100
LINDLEY'S ASTER			
(*Aster ciliolatus)*	3	1-4	100
FIREWEED			
(*Epilobium angustifolium*)	2	0-3	75
GRASSES			
MARSH REED GRASS			
(*Calamagrostis canadensis)*	7	1-16	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
576-606(584) M

PERCENT SLOPE GRADIENT:
LEVEL

SOIL DRAINAGE:
WELL TO MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

GRASS	259(0-617)
FORBS	32[illegible](142-524)
SHRUBS	128(23-234)
TOTAL	709(496-916)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
3.0 HA/AUM (0.15 AUM/AC)

CMC11. Aw/Rose/Clover

(Populus tremuloides/Rosa acicularis/Trifolium spp.)

n=1 This community type is represented by aspen stands that have recieved moderate to heavy grazing pressure for a number of years. As a result, native forbs have declined and clover has increased in the understory. A small portion of the original shrub and tall forb understory still remains. Although, grass production has dropped, forb production remains high due to the dense cover of clover. This community has not been grazed as long as the Aw/Kentucky bluegrass/Clover community type (Willoughby 1996).

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	30	-	100
BALSAM POPLAR *(Populus balsamifera)*	18	-	100
SHRUBS			
WILD RED RASPBERRY *(Rubus idaeus)*	3	-	100
PRICKLY ROSE *(Rosa acicularis)*	5	-	100
FORBS			
CLOVER *(Trifolium sp.)*	18	-	100
DANDELION *(Taraxacum officinale)*	4	-	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	-	100
HORSETAIL *(Equisetum arvense)*	4	-	100
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	1	-	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	2	-	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	10	-	100
CREEPING RED FESCUE *(Festuca rubra)*	5	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
UNHEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	512
FORBS	192
SHRUBS	224
TOTAL	928

ECOLOGICALLY SUSTAINABLE STOCKING RATE
2.0 HA/AUM (0.2 AUM/AC)

CMC12. Aw/Alder-Willow-Rose

(Populus tremuloides/ Alnus crispa-Salix spp.-Rosa acicularis)

n=13 This community type is scattered throughout the Central Mixedwood subregion on mainly mesic to subhygric, well-drained sites. This community is likely of fire origin. Many of the plots were described from a large fire that burned through the area in 1968. The aspen trees are also young and very dense. The high cover of aspen, alder, and willow limits the amount of light reaching the understory. Consequently, there is little forage available for domestic livestock. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	59	30-90	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	11	0-23	92
BLUEBERRY *(Vaccinium myrtilloides)*	1	0-2	31
WILLOW *(Salix spp.)*	12	0-43	61
GREEN ALDER (*Alnus crispa*)	31	0-85	92
FORBS			
BUNCHBERRY *(Cornus canadensis)*	10	0-26	92
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-6	61
TWINFLOWER *(Linnaea borealis)*	11	0-45	85
DEWBERRY *(Rubus pubescens)*	4	0-10	85
WILD LILY-OF-THE-VALLEY (*Maianthemum canadense*)	2	0-6	77
YELLOW PEAVINE (*Lathyrus ochroleucus*)	2	0-9	69
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	5	0-19	92
HAIRY WILDRYE *(Elymus innovatus)*	1	0-2	39
MOUNTAIN RICEGRASS (*Oryzopsis asperfolia*)	T	0-2	15

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
635(333-758) M

PERCENT SLOPE GRADIENT:
5(0-15)%

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	75(8-350)
FORBS	200(2-476)
SHRUBS	225(5-660)
TOTAL	499(100-930)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
3.6 HA/AUM (0.1 AUM/AC)

CMC13. Aw/Willow

(Populus tremuloides/Salix spp.)

n=4 This community type is similar to the Aw/Alder-Willow-Rose community type, but lacks the cover of alder. Previously, this community type was split into four community types (Willoughby and Downing 1995). These included the Aw/Willow-Rose/Twinflower, Aw/Willow-Rose/Bunchberry, Aw/Rose-Willow-Pin cherry/Fireweed and Aw/Rose-Willow-Saskatoon. All four community types appeared to have had a fire origin, but had slightly different moisture and nutrient regimes which affected forage productivity. Productivity varied from 1326 to 1306 kg/ha on the Aw/Willow-Rose/Bunchberry and Aw/Rose-Willow-Pin cherry/Fireweed types to 606 kg/ha on the Aw/Willow-Rose/Twinflower type. Because the sample size was so small it was felt to be impractical to split the four community types and they were lumped into this one type for the purpose of this guide. As this community undergoes succession forage productivity will decline.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	53	40-68	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	13	11-15	100
WILLOW SPP. *(Salix spp.)*	27	15-35	100
LOW BUSH CRANBERRY *(Viburnum edule)*	4	0-12	75
FORBS			
BUNCHBERRY *(Cornus canadensis)*	13	2-30	100
WILD SARSAPARILLA *(Aralia nudicaulis)*	9	0-18	75
YELLOW PEAVINE *(Lathyrus ochroleucus)*	5	1-10	100
DEWBERRY *(Rubus pubescens)*	7	2-12	100
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	6	3-11	100
FIREWEED *(Epilobium angustifolium)*	11	3-32	100
TWINFLOWER *(Linnaea borealis)*	5	1-11	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	7	1-13	100
HAIRY WILDRYE *(Elymus innovatus)*	4	1-10	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
542(333-636) M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	461(2-708)
FORBS	493(362-552)
SHRUBS	209(107-378)
TOTAL	1162(606-1367)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.6 HA/AUM (0.25 AUM/AC)

CMC14. Aw-Pb/Red osier dogwood-Rose

(Populus tremuloides-P. balsamifera/Cornus stolonifera-Rosa acicularis)

n=8 This community is typical of river floodplains throughout the Central Mixedwood subregion. This community has a subhygric moisture and rich nutrient regime. Beckingham and Archibald (1996) found this community type on mid to lower slope topographic positions or near water courses where they recieve nutrient-rich seepage or flood waters for a portion of the growing season. This community type is one of the most productive in the Central Mixedwood, but the high cover of shrubs limits access to livestock. The high cover of tall growing shrubs (alder, red osier dogwood) also limits the growth of low shrubs, forbs and grass the principle forage species for domestic livestock in deciduous forests. As a result, this community should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	53	25-70	100
BALSAM POPLAR *(Populus balsamifera)*	14	0-25	75
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	8	0-26	88
RED OSIER DOGWOOD *(Cornus stolonifera)*	22	3-40	100
RIVER ALDER *(Alnus tenuifolia)*	3	0-5	38
FORBS			
LADY FERN *(Athyrium filix-femina)*	1	0-11	25
WILD SARSAPARILLA *(Aralia nudicaulis)*	3	0-10	75
DEWBERRY *(Rubus pubescens)*	4	0-6	63
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	1	0-10	50
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4	1-10	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	3	1-10	100
HAIRY WILDRYE *(Elymus innovatus)*	1	0-1	38

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
PERMESOTROPHIC
ELEVATION:
602(600-606)M
SLOPE PERCENT:
2(1-3)%
SOIL DRAINAGE:
MODERATELY WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	7(2-22)
FORBS	205(66-372)
SHRUBS	265(20-358)
TOTAL	476(226-714)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMC15. Aw/Horsetail-Cow parsnip

(Populus tremuloides/Equisetum arvense-Heracleum lanatum)

n=1 This community type occupies lowland sites adjacent to black spruce and willow lowlands. It is very moist and nutrient rich. Horsetail types in other subregions also tend to be moister and richer than the modal Aw/Rose types. This site is very productive and produces a large amount of forage for domestic livestock. Horsetail is generally unpalatable to livestock and can be poisonous to horses. In contrast cow parsnip is very palatable to livestock. This community type would therefore be rated as primary or secondary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
TREMBLING ASPEN *(Populus tremuloides)*	12	-	100
SHRUBS			
WILD RED RASPBERRY (*Rubus idaeus*)	3	-	100
FORBS			
COW PARSNIP *(Heracleum lanatum)*	30	-	100
FIREWEED *(Epilobium angustifolium)*	1	-	100
HORSETAIL *(Equisetum arvense)*	25	-	100
TALL LUNGWORT (*Mertensia paniculata*)	18	-	100
TALL LARKSPUR (*Delphinium glaucum*)	13	-	100
GRASSES			
MARSH REED GRASS *(Calamagrostis canadensis)*	47	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC TO HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
758 M

SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	1292
FORBS	1440
TOTAL	2732

ECOLOGICALLY SUSTAINABLE STOCKING RATE
0.7 HA/AUM (0.55 AUM/AC)

CMC16. Aspen/ Smooth brome

(Populus tremuloides/Bromus inermis)

n=1 This community type is similar to the previously described red osier dogwood dominated community type, but has a high cover of smooth brome in the understory. Smooth brome is an introduced grass that can increase with increased grazing pressure, but smooth brome is also highly invasive and can invade into ungrazed areas. The invasion of non-native invaders onto the site makes this community moderately productive for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	80	-	100
SHRUBS			
ROSE (*Rosa acicularis*)	3	-	100
SNOWBERRY *(Symphoricarpos occidentalis)*	3	-	100
RED OSIER DOGWOOD (*Cornus stolonifera*)	1	-	100
FORBS			
TALL LUNGWORT *(Mertensia paniculata)*	10	-	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	-	100
YELLOW PEAVINE *(Lathyrus ochroleucus)*	3	-	100
GRASSES			
SMOOTH BROME (*Bromus inermis*)	50	-	100
MARSH REEDGRASS (*Calamagrostis canadensis*)	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC-SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC-PERMESOTROPHIC
ELEVATION:
600 M
SOIL DRAINAGE:
MODERATELY WELL
HEALTH RATING:
HEALTHY WITH PROBLEMS

FORAGE PRODUCTION(KG/HA)

TOTAL: 1100*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
1.8 HA/AUM (0.2 AUM/AC)

CENTRAL MIXEDWOOD SUBREGION

CONIFEROUS AND MIXEDWOOD FOREST COMMUNITIES

Photo 10. The Balsam fir-White spruce/Moss community type is the climatic climax community for the Central Mixedwood subregion.

CM-CONIFEROUS AND MIXEDWOOD FORESTS

The mixedwood and coniferous community types described in this guide represent five ecological sites as described by Beckingham and Archibald (1996). On sites with subxeric moisture and poor nutrient regimes, coarse textured, sandy soils open stands of jack pine generally dominate (Pj/Alder, Pj/Bearberry). These community types commonly have a carpet of lichens covering the forest floor and a thin organic layer typically less than 5 cm thick (Beckingham and Archibald 1996).

On slightly moister sites with submesic moisture and medium nutrient regimes aspen grows in conjunction with jack pine to form the Aw-Pj/Bearberry/Lichen community type. The soils of this community type continue to be coarse-textured but the moisture and nutrient conditions are more favourable to the growth of aspen.

The mesic/medium sites are generally dominated by white spruce (Balsam fir-Sw/Moss, Sw/Moss, Sw/Creeping red fescue) and mixedwood communities of aspen and spruce (Aw-Sw/Rose/Low forb). These communities represent the reference ecosite for the Boreal Mixedwood subregion (Beckingham and Archibald 1996). Generally, these sites have moderately fine to fine-textured till or glaciolacustrine parent materials. Pioneer deciduous species (aspen, balsam poplar and birch) are replaced with white spruce and balsam fir as these sites develop successionally. With succession shade tolerant plants take over the herbaceous layer as conifers dominate the canopy. These shade tolerant species are unproductive and often unpalatable for domestic livestock. Forage productivity declines from 2.3 ha/AUM in a deciduous community to 2.3-8.6 ha/AUM in a mixedwood community to less than 10 ha/AUM in a conifer community.

Black spruce and larch communites generally dominate on wetter sites with subhygric to subhydric moisture regimes and poor to medium nutrient regimes to form the Sb/Bog birch and Sb/Labrador tea/Moss community types. Larch is more tolerant of excessive moisture and is indicative of an enriched nutrient status, while black spruce is typical in areas of stagnating ground water with poor nutrient status (Hay et al. 1985). Generally, these community types are considered non-use for domestic livestock.

Beckingham and Archibald (1996), provide a good description on how the conifer and mixedwood communities are arranged in the landscape.

Table 10. Production (kg/ha) and sustainable stocking rate (ha/AUM) for the ecological site phases, conifer and mixedwood communities of the Central Mixedwood subregion

Ecological site	Community number	Community type	Productivity (kg/ha)				Sustainable Stocking Rate 'ha/AUM' (AUM/ac)
			Grass	Forb	Shrub	Total	
a xeric/poor	**Ecological site phase**	**a1 lichen Pj**	**13**	**44**	**64**	**120**	**Non-use**
	CMD1	Pj/Alder	0	40	86	126	Non use
	CMD2	Pj/Bearberry	25	47	41	113	Non use
b submesic/medium	**Ecological site phase**	**b1 blueberry**	**28**	**46**	**134**	**208**	**Non-use**
	CMD3	Aw-Pj/Bearberry/Lichen	28	46	134	208	Non use
d mesic/medium	**Ecological site phase**	**d2 low-bush cranberry Aw-Sw**	**86**	**194**	**128**	**408**	**4.5(>0.1)**
	CMD7	Aw-Sw/Rose/Low forb	86	194	128	408	4.5(>0.1)
	Ecological site phase	**d3 low-bush cranberry Sw**	**5**	**90**	**27**	**123**	**Non-use**
	CMD4	Balsam fir-Sw/Moss	0	102	0	102	Non use
	CMD5	Sw/Moss	10	78	54	143	Non use

	CMD11	Aw-Sw/Hazelnut				*500*	Non use
	Ecological site phase	**d3 grazed spruce**	**525**	**100**	**0**	**625**	**3.0(0.15)**
	CMD6	Sw/Creeping red fescue	525	100	0	625	3.0 (0.15)
f hygric/rich	**Ecological site phase**	**f3 horsetail Sw**	***10***	***300***	***250***	***560***	**Non-use**
	DMD14	Sw/Horsetail	*10*	*300*	*250*	*560*	Non use
h hygric/medium	**Ecological site phase**	**h1 Labrador tea/Horsetail Sw**	**0**	**96**	**96**	**192**	**Non-use**
	CMD8	Aw-Sw/Labrador tea/Moss	0	96	96	192	Non use
i subhygric/very poor	**Ecological site phase**	**i1 treed bog**	**52**	**61**	**91**	**228**	**Non-use**
	CMD9	Sb/Labrador tea/Peat moss	52	61	91	228	Non use
j suhydric/medium	**Ecological site phase**	**j1 treed poor fen**	**104**	**90**	**400**	**594**	**Non-use**
	CMD10	Sb/Bog birch	104	90	400	594	Non use

Conifer and Mixedwood Types - Central Mixedwood Subregion

1. Wet, lowland sites dominated by black spruce..2
Upland mesic sites or well drained sandy sites..3

2. Bog birch, sedge dominate understory(rich fen)..............................**Sb/Bog Birch (CMD10)**
Labrador tea dominates understory, larch
present (poor fen)..**Sb/Labrador Tea/Peat Moss (CMD9)**

3. Mesic sites dominated by spruce, aspen, balsam poplar (maybe co-dominated by jack
pine)..4
Dry, sandy sites dominated by jack pine...8

4. Mixedwood types, mixture of conifer and deciduous trees..............................5
White spruce or balsam fir dominated types...7

5. Aw-Sw mixedwood, typical mesic sites...6
Drier sites with Jack pine, Aw-Pj dominated............... **Aw-Pj/Bearberry/Lichen (CMD3)**

6. Rose, low forb, hazelnut dominated, typical mesic sites...............................6a
Labrador tea dominated, poorer nutrient sites.........**Aw-Sw/Labrador Tea/Moss (CMD8)**
6a. Rose, low forb dominated...................................**Aw-Sw/Rose/Low Forb (CMD7)**
Hazelnut dominated..**Aw-Sw/Hazelnut (CMD11)**
7. Balsam fir dominates(old growth forest)..............................**Balsam Fir-Sw/Moss (CMD4)**
White spruce dominates overstory..7a
7a. Moss dominates understory..**Sw/Moss (CMD5)**
Horsetail dominates understory....................................**Sw/Horsetail(CMD12)**

8. Jack pine overstory, bearberry or lichen dominates understory, alder low in cover or
absent..**Pj/Bearberry (CMD2)**
Jack pine overstory, alder dominates understory....................................**Pj/Alder (CMD1)**

CMD1. Pj/Alder

(Pinus banksiana/ Alnus crispa)

n=1 This community type is found on dry, rapidly drained, sandy soils with a poor nutrient status. Consequently, production is quite low. Cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the area of forage. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION

PLANT COMPOSITION	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
JACK PINE *(Pinus banksiana)*	45	-	100
SHRUBS			
GREEN ALDER *(Alnus crispa)*	41	-	100
PRICKLY ROSE *(Rosa acicularis)*	5	-	100
BLUEBERRY *(Vaccinium myrtilloides)*	13	-	100
FORBS			
TWIN-FLOWER *(Linnaea borealis)*	4	-	100
BEARBERRY *(Arctostaphylos uva-ursi)*	T	-	100
WILD SARSAPARILLA *(Aralia nudicaulis)*	3	-	100
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	4	-	100
GRASSES			
SEDGES *(Carex spp.)*	4	-	100
HAIRY WILD RYE *(Elymus innovatus)*	4	-	100
NORTHERN RICEGRASS *(Oryzopsis pungens)*	5	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBXERIC

NUTRIENT REGIME
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
2 - 8

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	0
FORBS	40
SHRUBS	86
TOTAL	126

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD2. Pj/Bearberry

(Pinus banksiana/Arctostaphylos uva-ursi)

n=2 This community represents a jack pine forest which is very similar to the Pj/Alder community type. Like the previous community cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
JACK PINE			
(Pinus banksiana)	38	30-45	100
ASPEN			
(*Populus tremuloides*)	T	0-1	50
SHRUBS			
BOG CRANBERRY			
(Vaccinium vitis-idaea)	6	0-11	50
PRICKLY ROSE			
(Rosa acicularis)	T	0-1	50
BLUEBERRY			
(Vaccinium myrtilloides)	2	0-3	50
FORBS			
BEARBERRY			
(Arctostaphylos uva-ursi)	18	16-19	100
NORTHERN BEDSTRAW			
(Galium boreale)	T	0-1	50
WILD LILY-OF-THE-VALLEY			
(Maianthemum canadense)	1	0-1	100
PHILADEPHLIA FLEABANE			
(Erigeron philadelphicus)	1	0-1	50
GRASSES			
HAIRY WILD RYE			
(Elymus innovatus)	2	0-3	50
SEDGE SPP.			
Carex spp.)	6	0-11	100
NORTHERN RICEGRASS			
(*Oryzopsis pungens*)	2	1-2	100
MOSSES			
Moss spp.	18	0-35	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
624(576-671) M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
10%

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	25(0-50)
FORBS	47(40-54)
SHRUBS	41(10-72)
TOTAL	113(100-126)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD3. Aw-Pj/Bearberry/Lichen

(Populus tremuloides-Pinus banksiana/Arctostaphylos uva-ursi/Lichen)

n=2 This community type represents a aspen forest with a secondary canopy of jack pine. It is very similar to the Pj/Bearberry community type, but it is found on slightly moister soils with better nutrients. These conditions favour the growth of aspen. Like the previous community cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
JACK PINE			
(Pinus banksiana)	15	10-20	100
ASPEN			
(*Populus tremuloides*)	20	15-25	100
SHRUBS			
BOG CRANBERRY			
(Vaccinium vitis-idaea)	4	0-8	50
PRICKLY ROSE			
(Rosa acicularis)	1	0-1	50
BLUEBERRY			
(Vaccinium myrtilloides)	8	0-15	50
FORBS			
BEARBERRY			
(Arctostaphylos uva-ursi)	8	2-12	100
TWINFLOWER			
(Linnaea borealis)	T	0-1	50
WILD LILY-OF-THE-VALLEY			
(Maianthemum canadense)	2	0-3	50
TOADFLAX			
(*Comandra umbellata*)	1	0-1	100
GRASSES			
SLENDER WHEATGRASS			
(Agropyron trachycaulum)	2	0-4	50
NORTHERN RICEGRASS			
(Oryzopsis pungens)	2	0-4	50
SEDGE			
(Carex spp.)	4	0-7	100
LICHENS	49	16-81	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
576 M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	28
FORBS	46
SHRUBS	134
TOTAL	208

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD4. Balsam fir-Sw/Moss

(Abies balsamea-Picea glauca/ Moss*)*

n=1 This is a mature balsam fir forest which represents the climax vegetation for the area. The northerly aspect of this community type has probably protected the site from past disturbance by fires and allowed the community to undergo succession. The high canopy of balsam fir and spruce limits the light reaching the forest floor, limiting the growth of grasses and forbs. As a result, the forage productivity of this community type is very low. This community would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	25	-	100
BALSAM FIR *(Abies balsamea)*	40	-	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	T	-	100
FORBS			
BUNCHBERRY *(Cornus canadensis)*	10	-	100
TWINFLOWER *(Linnaea borealis)*	4	-	100
WOODLAND HORSETAIL *(Equisetum sylvaticum)*	6	-	100
RUNNING CLUBMOSS (*Lycopodium clavatum*)	3	-	100
MOSSES			
FEATHER MOSS (*Pleurozium schreberi*)	51	-	100
STAIRSTEP MOSS (*Hylocomium splendens*)	37	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
333 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
5%

ASPECT:
NORTHERLY
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	0
FORBS	102
SHRUBS	0
TOTAL	102

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD5. Sw/Moss

(Picea glauca/Moss)

n=8 This community is considered successionally mature. A more continuous cover of feather moss and presence of balsam fir would bring this community type closer to the climax community described previously. The limited light penetration in this community discourages understory development, making this a non-use area for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	49	20-70	100
ASPEN *(Populus tremuloides)*	4	1-13	50
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	4	0-10	86
RED OSIER DOGWOOD *(Cornus stolonifera)*	2	1-9	33
LOW BUSH CRANBERRY (*Viburnum edule*)	1	1-3	71
FORBS			
BUNCHBERRY *(Cornus canadensis)*	7	2-14	86
FIELD HORSETAIL *(Equisetum arvense)*	1	0-3	29
TWINFLOWER *(Linnaea borealis)*	7	0-18	71
PALMATE LEAVED COLTSFOOT *(Petasites palmatus)*	3	0-5	85
DEWBERRY *(Rubus pubescens)*	1	0-3	57
FIREWEED *(Epilobium angustifolium)*	1	0-3	29
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	1	0-2	71
MOSS			
STAIR STEP MOSS (*Hylocomium splendens*)	13	0-49	19
FEATHERMOSS (*Pleurozium schreberi*)	1	0-7	17

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
415(150-606) M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
1%

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	10(0-40)
FORBS	78(0-172)
SHRUBS	54(0-158)
TOTAL	143(36-370)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD6. Sw/Creeping red fescue

(Picea glauca/Festuca rubra)

n=1 This community type represents an old cultivated field which has been planted to white spruce. The canopy of spruce is beginning to shade the understory causing a decline in productivity, however, there is still enough forage for grazing between the spruce trees.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	1	-	100
WHITE SPRUCE *(Picea glauca)*	35	-	100
BALSAM POPLAR (*Populus balsamifera*)	1	-	100
SHRUBS			
SNOWBERRY *(Symphoricarpos occidentalis)*	5	-	100
PRICKLY ROSE *(Rosa acicularis)*	10	-	100
FORBS			
STRAWBERRY *(Fragaria virginiana)*	11	-	100
CLOVER *(Trifolum hybridum)*	5	-	100
DANDELION *(Taraxacum officinale)*	5	-	100
LINDLEY'S ASTER *(Aster ciliolatus)*	3	-	100
GRASSES			
CREEPING RED FESCUE (*Festuca rubra*)	29	-	100
HAIRY WILDRYE (*Elymus innovatus*)	12	-	100
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	11	-	100
SEDGE			
(*Carex spp.*)	3	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	525
FORBS	100
SHRUBS	0
TOTAL	625

ECOLOGICALLY SUSTAINABLE STOCKING RATE
3.0 HA/AUM (0.15 AUM/AC)

CMD7. Aw-Sw/Rose/Low forb

(Populus tremuloides-Picea glauca/ Rosa acicularis/Low forb)

n=5 This community type is dominated by aspen in the primary canopy and by spruce in the secondary canopy. It occupies similar site conditions to the Aw/Rose/Low forb community type. As spruce succeeds into the canopy it reduces the amount of light reaching the forest floor reducing the growth of shrubs, forbs and grass. This community type would be rarely used by livestock and should be rated as secondary range.

PLANT COMPOSITION	CANOPY COVER(%)		
	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE			
(Picea glauca)	29	9-80	80
TREMBLING ASPEN			
(Populus tremuloides)	33	20-60	100
BALSAM POPLAR			
(Populus balsamifera)	3	6-10	40
SHRUBS			
SNOWBERRY			
(Symphoricarpos occidentalis)	2	3-4	40
PRICKLY ROSE			
(Rosa acicularis)	10	1-19	100
BRACTED HONEYSUCKLE			
(Lonicera involcrata)	4	4-15	40
BUFFALOBERRY			
(Shepherdia canadensis)	2	1-7	60
FORBS			
TWINFLOWER			
(Linnaea borealis)	3	1-5	80
BUNCHBERRY			
(Cornus canadensis)	4	0-6	100
WINTERGREEN			
(Pyrola asarifolia)	1	0-3	60
DEWBERRY			
(Rubus pubscens)	2	1-4	60
BISHOP'S CAP			
(Mitella nuda)	1	0-2	80
GRASSES			
HAIRY WILDRYE			
(*Elymus innovatus*)	5	1-10	80
MARSH REEDGRASS			
(*Calamagrostis canadensis*)	3	1-9	60
MOSSES			
MOSS SPP.	4	4-7	30

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
573(150-758) M
SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HAF)

GRASS	86(2-308)
FORBS	194(70-418)
SHRUBS	128(50-308)
TOTAL	408(160-1034)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
4.5 HA/AUM (>0.1 AUM/AC)

CMD8. Aw-Sw/Labrador tea/Moss

(Populus tremuloides-Picea glauca/Ledum groenlandicum/Moss)

n=1 This community type has relatively poor nutrient status. Labrador tea and bog cranberry are indicative of acidic soil surface soil conditions. Beckingham and Archibald (1996) described this ecosite with a jack pine and black spruce dominated overstory. The moisture and nutrient conditions of this community type are probably better than their ecosite, which allows aspen and white spruce to dominate the overstory, but the soil conditions are poorer than the Aw-Sw/Rose/Low forb community type. This community type produces little palatable forage and therefore would be classified as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
ASPEN *(Populus tremuloides)*	55	-	100
WHITE SPRUCE *(Picea glauca)*	40	-	100
SHRUBS			
LABRADOR TEA *(Ledum groenlandicum.)*	11	-	100
BLUEBERRY *(Vaccinium myrtilloides)*	8	-	100
BOG CRANBERRY *(Vaccinium vitis-idaea)*	4	-	100
FORBS			
BUNCHBERRY *(Cornus canadensis)*	5	-	100
TWINFLOWER *(Linnaea borealis)*	5	-	100
BASTARD'S TOADFLAX *(Geocaulon lividum)*	3	-	100
COW-WHEAT *(Melampyrum lineare)*	3	-	100
GRASSES			
HAIRY WILDRYE *(Elymus innovatus)*	1	-	100
MOSSES			
Moss spp.	67	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC- MESIC
NUTRIENT REGIME:
SUBMESOTROPHIC-MESOTROPHIC
ELEVATION:
333 M
SOIL DRAINAGE:
MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	0
FORBS	96
SHRUBS	96
TOTAL	192

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD9. Sb/Labrador tea/Moss

(Picea mariana/Ledum groenlandicum/Moss)

n=7 This community type appears to be related to the bog ecosite described by Beckingham and Archibald (1996). The bog ecosite commonly has organic soils consisting of slowly decomposing peat moss. This community type is considered non-use for livestock, due to the lack of forage and poor accessibility.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
LARCH *(Larix laricina)*	14	10-75	50
BLACK SPRUCE *(Picea mariana)*	31	5-65	88
SHRUBS			
WILLOW SPP. *(Salix spp.)*	5	1-20	38
LABRADOR TEA *(Ledum groenlandicum)*	29	7-61	100
FORBS			
CLOUDBERRY *(Rubus chamaemorus)*	8	13-35	38
HORSETAIL *(Equisetum arvense)*	4	7-23	25
DWARF SCOURING RUSH *(Equisetum scirpoides)*	1	2-3	25
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	3	3-10	50
SEDGE *(Carex aurea)*	4	7-14	38
WATER SEDGE *(Carex aquatilis*	3	6-14	25
MOSSES *(Sphagnum spp)*	44	75-99	63

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
OLIGOTROPHIC

ELEVATION:
615(579-636) M
SOIL DRAINAGE:
POORLY

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION (KG/HA)

GRASS	52(0-192)
FORBS	61(0-286)
SHRUBS	91(0-200)
TOTAL	228(30-678)

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD10. Sb/Bog birch

(Picea mariana/Betula glandulosa)

n=1 This community type is part ot the poor fen ecosite (Beckingham and Archibald 1996) because it has an intermediate nutrient regime between the bog and rich fen ecosites. Drainage on this community type is poor to very poor, but has some movement of water through the site. This community type has a well developed shrub layer and the grass layer consists mainly of marsh reedgrass and sedge species. The productivity of this type is moderate, but the high water table limits access to domestic livestock. This community would be rated as non-use.

Plant Composition Canopy Cover(%)

	Mean	Range	Const.
Trees			
Larch			
(Larix laricina)	10	-	100
Black Spruce			
(Picea mariana)	5	-	100
Shrubs			
Willow spp.			
(Salix spp.)	30	-	100
Bog birch			
(Betula glandulosa)	24	-	100
Blueberry			
(*Vaccinium myrtilloides*)	12	-	100
Forbs			
Small bog cranberry			
(Oxycoccus microcarpus)	57	-	100
Horsetail			
(Equisetum arvense)	2	-	100
Three leaved Solomon's-seal			
(Smilicina trifolia)	5	-	100
Grasses			
Marsh reedgrass			
(Calamagrostis canadensis)	6	-	100
Sedge			
(Carex aurea)	2	-	100
Mosses			
(*Sphagnum spp.*)	47	-	100

Environmental Variables

Moisture Regime:
Subhydric
Nutrient Regime:
Oligotrophic

Elevation:
576 m
Soil Drainage:
poorly
Rangeland health rating:
Healthy

Forage Production (kg/ha)

grass	104
forbs	90
shrubs	400
Total	594

Ecologically sustainable stocking rate
non-use

CMD11. Aw-Sw/Hazelnut

(Populus tremuloides-Picea glauca/Corylus cormuta)

n=1 This is a mixedwood forest which is approaching climax. The northerly aspect of this community type has probably protected the site from past disturbance by fires and allowed the community to undergo succession. The high canopy of spruce limits the light reaching the forest floor, limiting the growth of grasses and forbs. As a result, the forage productivity of this community type is very low. This community would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	30	-	100
ASPEN *(Populus tremuloides)*	40	-	100
SHRUBS			
HAZELNUT *(Corylus cornuta)*	30	-	100
RED OSIER DOGWOOD *(Cornus stolonifera)*	10	-	100
PRICKLY ROSE *(Rosa acicularis)*	10	-	100
FORBS			
WILD SARSAPARILLA *(Aralia nudicaulis)*	20	-	100
SHOWY ASTER *(Aster conspicuus)*	3	-	100
TWINFLOWER *(Linnaea borealis)*	3	-	100
BUNCHBERRY *(Cornus canadensis)*	3	-	100
MOSSES			
MOSS SPP.	73	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL
RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

GRASS	0
FORBS	132
SHRUBS	74
TOTAL	206

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

CMD12. Sw/Horsetail

(Picea glauca/Equisetum arvense)

n=1 This community type is wet and nutrient rich. These sites are commonly found on fluvial or glaciolacustrine parent materials where flooding or seepage enhances the substrate nutrient supply. With high water tables, wet soil conditions organic matter tends to accumulate which favours the growth of horsetails. Generally horsetails are unpalatable to livestock and the wet ground conditions limit access. Consequently, this community type should be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

	MEAN	RANGE	CONST.
TREES			
WHITE SPRUCE *(Picea glauca)*	80	-	100
BALSAM FIR *(Abies balsamea)*	1	-	100
SHRUBS			
PRICKLY ROSE *(Rosa acicularis)*	1	-	100
RIVER ALDER *(Alnus tenuifolia)*	3	-	100
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	3	-	100
FORBS			
DEWBERRY *(Rubus pubescens)*	3	-	100
HORSETAIL *(Equisetum sylvaticum)*	40	-	100
THREE LEAVED SOLOMONS SEAL *(Smilacina trifolia)*	10	-	100
BUNCHBERRY *(Cornus canadensis)*	3	-	100
GRASSES			
MARSH REEDGRASS *(Calamagrostis canadensis)*	10	-	100

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
600 M

SOIL DRAINAGE:
POOR TO MODERATELY WELL

RANGELAND HEALTH RATING:
HEALTHY

FORAGE PRODUCTION(KG/HA)

TOTAL 560*ESTIMATE

ECOLOGICALLY SUSTAINABLE STOCKING RATE
NON-USE

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